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NEW LOCATIONS FOR THE FIVE-STRIPED SPARROW IN THE UNITED STATES

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The Five-striped Sparrow *(Aimophila quinquestriata)* was first reported in the United States in 1957 just west of Madera Canyon in the Santa Rita Mountains of southeastern Arizona (Binford 1958). The species was not observed in the United States again until 1969 when at least two were found southwest of Patagonia, Arizona, where it has appeared every year since (Snider 1969, 1970, 1971; Monson 1973; Bill Harrison pers. comm.). The 1957 bird was considered an accidental (Phillips et al. 1964) and, because the area had been worked by numerous ornithologists before 1969, the population at Patagonia was considered by many to have just been established. No real effort was made to look for other populations in the United States except for limited explorations in the vicinity of the Patagonia population and in areas to the west by Jim Silliman, Kathy Groschupf and myself in 1975 and 1976. But on 12 June 1977 a Five-striped Sparrow was seen in lower Sycamore Canyon south of the Atascosa Mountains, Santa Cruz Co., Arizona (Bill Harrison pers. comm.). That report instigated a thorough search of Sycamore Canyon and, ultimately, an extensive search in the vicinity of the Atascosa and Santa Rita mountains. This paper reports the results of those searches.

METHODS AND MATERIALS

From an analysis of the habitat characteristics of the Patagonia and Sycamore Canyon locations, descriptions of Five-striped Sparrow habitat in Mexico (Wolf 1977), and communications with other observers, two major habitat requirements for Five-stripes appeared to be steep hillsides and riparian vegetation with a closed canopy. A "search image" derived from these two characteristics alone was used to locate likely areas using U. S. Geological Survey topographic maps and aerial photo-

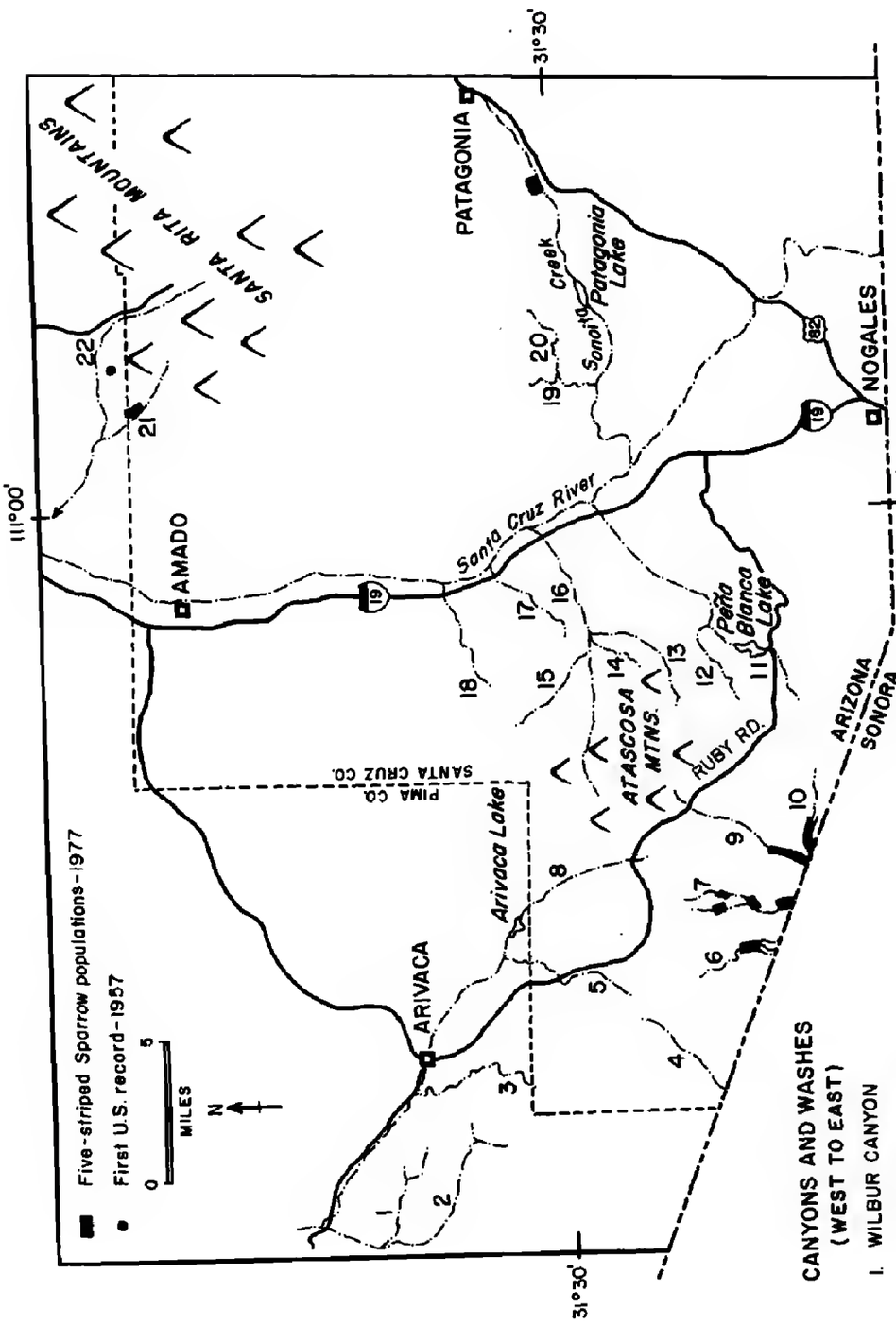

Figure 1. Five-striped Sparrow (*Aimophila quinquestriata*) populations found in southeastern Arizona in 1977.

graphs from the University of Arizona library. Results of later searches modified this image; riparian vegetation was dropped as a requirement and was replaced by thick hillside vegetation. Only areas below 4000 ft. elevation were considered. A flight over part of the area was also helpful in locating and evaluating areas with appropriate features. Appropriate areas were visited, and taped songs were played intermittently to locate birds. Sexes were identified primarily on the basis of song; only males are known to sing (Wolf 1977, pers. obs.). Any bird accompanying a singing bird was assumed to be a female.

RESULTS

Eighteen areas that seemed suitable for Five-stripes were located in the vicinity of the Atascosa and Santa Rita mountains. Fourteen of these areas were visited between 5 July and 1 September 1977 (Figure 1). The remaining areas were not visited, due mainly to their inaccessibility, but are described later. The areas where new populations of Five-striped Sparrows were found are listed below. All elevations and place names are from USGS topographic maps. Elevations are given only to the nearest contour interval and represent elevations along canyon bottoms.

SYCAMORE CANYON. This canyon was walked from the vicinity of Yank Spring to the Mexican border on 5 July. Elevations walked range from 4000 to 3500 ft. Twelve male and eight female Five-stripes were found in approximately the lower 1.9 km walked (3500-3600 ft.). The birds appeared to be regularly spaced, but those encountered closer to the border were more closely packed and no birds were found in the southernmost 0.2 km where the hillsides are not as steep. Sixteen of the 20 birds were on the east (west-facing) slope, one pair was along the west side of the canyon floor and one pair was seen on both north and south slopes where the canyon runs east-west. Hillside vegetation is mostly desert scrub with scattered grasses. Acacia (*Acacia* sp.) and mesquite (*Prosopis* sp.) are among the common shrubs with scattered One-seed Juniper *(Juniperus monosperma)*, oak (*Quercus* sp.) and Saguaro *(Carnegiea gigantea)*. Amole *(Agave schottii)* is also a conspicuous hillside plant. Dominant riparian plants are Arizona Sycamore *(Plantanus wrightii)*, oak, ash (*Fraxinus* sp.) and mesquite, the latter forming dense thickets along the wash edges in the lower part of the canyon. There was no water in the wash. Males responded vigorously and immediately to taped songs, often approaching to within a few feet of the tape recorder.

CALIFORNIA GULCH. California Gulch is here used to include a portion of Tres Amegos Gulch as well. Part of this area (California Gulch at 3750 ft.) was visited briefly on 25 July. In a distance about 0.3 km long at least two males and one female Five-stripe were found on the east slope. On 6 August a walk was made from the above area down to the Mexican border (3500 ft.). Also covered was Tres Amegos Gulch from its junction with California Gulch up to an elevation of 3750 ft. Nine males and one female were recorded as follows: three males in the same area as visited on 25 July, three males and one female in an area of California Gulch within 0.6 km above the junction with Tres Amegos Gulch, one male 0.5 km above the Mexican border, and two males in Tres Amegos Gulch near its junction

with Warsaw Canyon. Nine of the 10 birds were on steep hillsides on the east slope. Vegetation on these hillsides consists of dense shrubs 1-2 m high, including acacia, mesquite, Chuparosa *(Anisicanthus thurberi)*, Kidneywood *(Eysenhardtia polystachya)* and Trumpet-Bush *(Tecoma stans)*, and scattered grass clumps. Vegetation on the west slope is similar but less dense. The only tall riparian vegetation consists of widely scattered oaks, ashes and, in places, Fremont Cottonwoods *(Populus fremontii)*. On 25 July males responded well to taped songs, though not as vigorously as those in Sycamore Canyon on 5 July. Virtually no responses were elicited on 6 August; all males were located by unprompted songs.

CHINO CANYON. Elevations checked in this canyon range from 3600 to 3800 ft. On 5 August two males and one female Five-stripe were found at an elevation of approximately 3680 ft. A pair was on a northwest-facing slope and the other male was on a west slope. Vegetation on the steep hillsides where birds were found consists of dense bushes, mostly acacia, mesquite, Chuparosa and scattered oaks, hackberry *(Celtis* sp.), and Ocotillo *(Fouqueria splendens)*. Mesquite and hackberry are present along the dry wash. Both males responded to taped songs. Chino Canyon was revisited briefly on 11 August and a nest containing four eggs was discovered. The male did not respond to the tape.

TONTO CANYON. Virtually all of Tonto Canyon that lies in the United States was walked on 6 August. Elevations range from 3600 ft. at the border up to 4000 ft. Twelve males and a female were observed in approximately 1.3 km. Tonto Canyon runs essentially east-west here; four birds were seen on the south slope and eight were on the north slope. Hillsides are covered with shrubs similar to those in California Gulch, though not as densely. There is virtually no tall riparian vegetation. Water was flowing most of the length of the canyon and there were many seemingly permanent pools. Most birds responded to taped songs though not vigorously. One male was seen carrying food.

HOLDEN CANYON. On 6 August seven males and one female were found in a 1.1 km stretch at elevations from 3650 to 3700 ft. The canyon was covered from an elevation of 4000 ft. down to about 3650 ft., which is about 1.1 km from the Mexican border. All birds were seen on the east slope although one male was also foraging on the lower west slope. Hillside vegetation is almost exactly like that in California Gulch. There is no continuous tall riparian vegetation along the dry wash, only scattered mesquites and willows *(Salix* sp.). There was no response to the tape. In addition to the eight adults that were found, the pair was followed to a nest that contained four large young. The last 1.1 km of this canyon were not covered due to logistics and more birds may be found in this area.

No Five-stripes were found in the following areas. They are included to better establish habitat requirements and to serve for future reference. Tapes of Five-stripe songs were played only at Cedar, Bellota and Peña Blanca canyons.

CEDAR CANYON. Cedar Canyon was walked on 29 July from near its intersection with the Ruby Road down to Arivaca Lake (4350 to 3800 ft.). Hillside vegetation is dominated by junipers and does not resemble any hillsides where Five-stripes have been found. There were occasional pools of water in the wash but no tall riparian vegetation.

BELLOTA CANYON. Bellota Canyon was walked on 29 July from an elevation of approximately 4100 down to 3700 ft. where it joins Peña Blanca Canyon. Hillsides are covered with oaks and junipers or grasses depending on exposure. Riparian vegatation is mostly oak with scattered ash and mesquites. There are no steep hillsides at the lower elevations.

PEÑA BLANCA CANYON. The area covered was from Peña Blanca Lake down to the junction with Bellota Canyon (3800 to 3700 ft.). Steep hillsides along the canyon are either nearly vertical with little vegetation or are covered with oak woodland. Riparian vegetation varies from oak, Arizona Walnut (*Juglans major)* and Desert Willow *(Chilopsis linearis)* to areas dominated by sycamores.

ORO BLANCO WASH. A small area along Oro Blanco Wash about 1.6 km north of where it crosses Ruby Road was checked on 29 July. The elevation is about 3700 ft. Hillside vegetation consists of thick shrubs, and riparian vegetation is predominantly large hackberries and walnuts. This area closely resembles areas where Five-stripes occur but is quite small (about 2 ha).

AGUA CERCADA. This refers to an area in the Sycamore Canyon drainage on the west side of the Atascosa Mountains near Agua Cercada Spring. Elevation of the area is 4350 ft. or higher. A visit was made only to the lower part on 29 July. Hillsides are densely covered with manzanita (*Arctostaphylus* sp.) and oaks.

PECK CANYON. Used here to refer to areas of lower Peck Canyon from its junction with Fresno Canyon (3600 ft.) down to the vicinity of the Kane Ranch (3500 ft.), Lost Dog Canyon from its junction with Peck Canyon (3600 ft.) up to an elevation of 3800 ft., Ramanote Canyon from its junction with Peck Canyon up to an elevation of 3700 ft., and Fresno Canyon from its junction with Peck Canyon up to an elevation of 3750 ft. This area was explored on 15 August. One possible Five-stripe was heard singing in Fresno Canyon at a distance but could not be found. Hillside vegetation varies from oak-juniper woodland to mesquite grassland; in places, especially in Fresno Canyon, there are limited areas of acacia, small mesquite, and Chuparosa that look marginally suitable for Five-stripes. Riparian vegetation consists mostly of ash.

FRAGUITA WASH. An area along this wash about 4.0 km south of Arivaca at an elevation of about 3850 ft. was checked on 15 August. The north-facing hillside is oak woodland and the south-facing is mesquite grassland. Riparian vegetation is mostly willow, ash and Desert Willow.

COAL MINE CANYON. This canyon was explored on 17 August from its junction with Fresno Canyon (3760 ft.) up to about 3840 ft. Appropriate hillsides are either oak woodland or sparsely covered with shrubs. Areas along Fresno Canyon from Coal Mine Canyon to Sonoita Creek are also sparsely covered with the same shrubs. The species of shrubs are the same as those in many of the locations where Five-stripes occur. Riparian vegetation in Coal Mine Canyon is mostly mesquite.

SIERRA CANYON. The 0.8 km of this canyon above the Mexican border were explored on 1 September 1977. The vegetation on the northwest-facing slope is predominantly mesquite and acacia with widely scattered Kidneywood, Chuparosa and barberry *(Berberis* sp.). Vegetation of the floodplain below is mostly scattered mesquite and oak. Hillside vegetation appears to be too open for Five-stripes but there are a few small pockets of relatively dense vegetation that may be suitable.

Male Five-striped Sparrow *(Aimophila quinquestriata)* with caterpillar in Ocotillo near Patagonia 31 July 1974.

Habitat of Five-striped Sparrows in Chino Canyon, Santa Cruz County, Arizona, 20 August 1977.

DISCUSSION

The large number of Five-striped Sparrows found in the canyons described certainly indicates that the species is well established in the United States. The total number of adults seen in Arizona in 1977 including the pair at Patagonia was 57 (43 males and 14 females). Three factors suggest that these census figures are minimal estimates for the areas searched:

1) The low level of response by males to taped song later in the year leaves open the possibility that some birds were missed.

2) Observations of Five-stripes at Patagonia for 3 years indicate that females are inconspicuous and easily overlooked while nesting. Relatively large numbers of females were seen only in Sycamore Canyon which was visited in early July when they were apparently not yet nesting. From these two observations I believe that most males have mates.

3) More birds may be located in the uncensused part of Holden Canyon.

There is also the possibility of our having missed areas where Five-stripes are established. Some areas that were not checked but which seem likely are listed below. Behavior of the birds in new locations, including the discovery of nests in Holden and Chino canyons and the male seen carrying food in Tonto Canyon, along with observations of the Patagonia population provide evidence that most birds were breeding.

Of interest is whether Five-stripes have only recently become established in the United States or have been here for some time. Although we can never be certain which view is correct, it is interesting to review the evidence. The isolated locations of the populations suggests that they would receive few visits from ornithologists. Access to virtually all the new locations requires high-clearance vehicles and relatively long hikes. With one exception, I can find no records of visits to these locations by qualified ornithologists in the summer months. Lower Sycamore Canyon was visited in "late June" by Van Rossem "one year" (Allan Phillips *fide* Amadeo Rea). Van Rossem worked extensively in Sonora and described the northern subspecies of the Five-striped Sparrow. But Van Rossem found Five-stripes in Sonora only at elevations below 2000 ft. (Van Rossem 1945) and probably did not expect them in Sycamore Canyon. Five-stripes are conspicuous only when singing and even then the similarity of its song to that of other species, especially Black-throated Sparrow *(Amphispiza bilineata),* makes it likely that they could easily be overlooked, unless they were specifically searched for.

The discovery of the Patagonia population in 1969 is generally accepted as a case of recent establishment since the area was well worked in prior years. But one could easily walk the riparian areas without being aware of Five-stripes on the neighboring slopes, especially if un-

familiar with the song. The site where the Patagonia population has been since 1969 was located only after the discovery of a bird at a popular roadside birding area approximately 0.5 km away (Bill Harrison pers. comm.). Also, the birds located in Chino Canyon are only about 4 km from the site of the one collected in 1957. Could that bird have wandered from a population in Chino Canyon?

Undoubtedly populations fluctuate from year to year like that at Patagonia (2 to 10 adults in the last 4 years) and it is likely that they may be locally extirpated and reestablished. The possibility also exists of a phenomenon like that exhibited by the Rufous-winged Sparrow *(Aimophila carpalis),* which apparently virtually disappeared from Arizona for 50 years and then reappeared as a fairly common though local species (Phillips 1968). Nonetheless the discovery of such a large number of Five-stripes makes the status of this species in southeast Arizona more than "casual," as listed by Peterson and Chalif (1973).

The habitats where Five-stripes are found in the United States are similar to those in Mexico (see Wolf 1977). For the six known Arizona locations the habitat characteristics are dense bushy vegetation and grasses on steep hillsides between 3500 and 4000 ft. Riparian vegetation is not required except perhaps where hillsides are less densely vegetated. Permanent open water is not necessary. Although most of the birds occur in canyons that flow into the Rio Magdalena in Mexico, Five-stripes are not restricted to them. The populations at Patagonia and in Chino Canyon occur along the drainage systems of the Santa Cruz River, which flows north into Arizona.

Probably the most important habitat requirement of Five-stripes is the presence of thick bushes 1-2 m high. This vegetation apparently occurs in Arizona only where the correct combinations of slope, soil, elevation, rainfall and exposure are met. Density of the shrubs is apparently more important than the species composition. Some areas such as Peck Canyon and both Fresno Canyons have essentially the same plant species as places with Five-stripes but at lower densities. However some shrubs do occur at all six locations, notably acacia, mesquite, Chuparosa and probably Kidneywood.

Most of the mountain ranges and foothills of southeastern Arizona (the area south of Interstate 10 and east of the Baboquivari Mountains) do not contain areas that meet the habitat requirements outlined above. This includes the Baboquivari Mountains which Phillips et al. (1964) cited as the eastern boundary of an area where Five-stripes seemed likely to appear. The areas that have steep hillsides are covered with oaks and areas at the right elevations are not steep enough. Guadaloupe Canyon in extreme southeast Arizona and southwest New Mexico, which has been considered a likely Five-stripe location by local Arizona birders, is higher (4250 ft. or higher) than any of the locations where Five-stripes are known to occur in the United States.

The only other locations in southeastern Arizona where Five-stripes seem likely are in the vicinity of the Atascosa Mountains. The following areas seem to meet the habitat requirements but have not been checked:

WILBUR CANYON and SAN LUIS WASH. About one mile of north-facing slopes of two forks of upper San Luis Wash at elevations of 3850 to 3950 ft. are covered with dense vegetation, but vegetative type is not discernable from aerial photographs.

NIGGER CANYON. Parts of the southeast slopes of Nigger Canyon from 3500 to 3600 ft. appear to be covered with shrubs. The hillsides are steep but not high.

ROCK CORRAL CANYON. North-facing hillsides above 3600 ft. in this canyon may contain suitable areas.

Other suitable sites exist in this general area but all are probably too small to support a Five-stripe population. It seems likely, however, that this species may occasionally occur at some of these areas as well as some of those mentioned earlier where none were found, especially areas around Sierra and Peck canyons.

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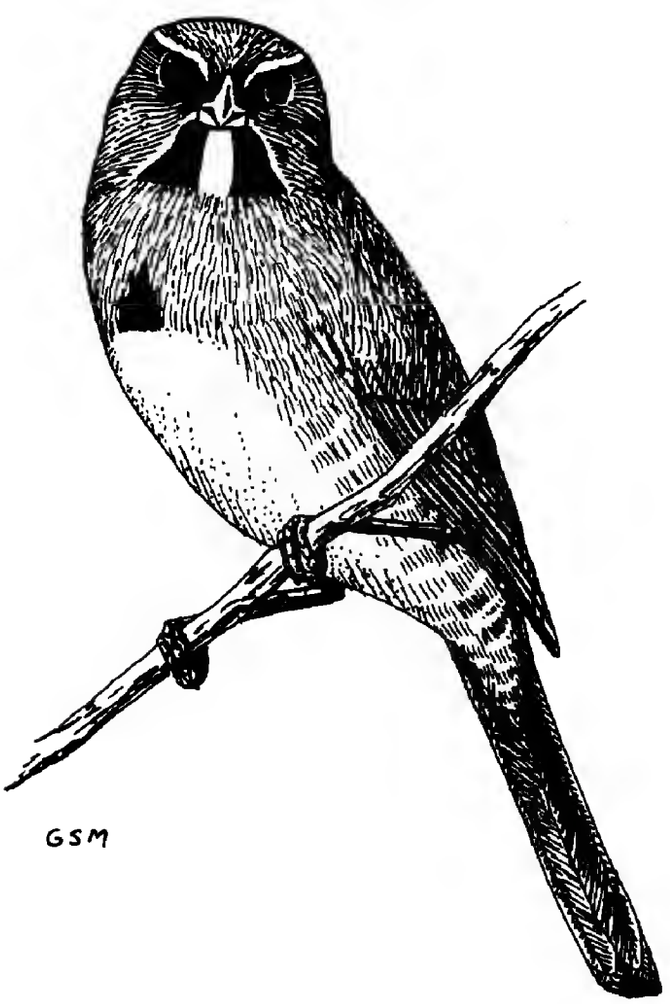

Sketch by G. Scott Mills

DISTRIBUTION OF THE SPOTTED OWL IN CALIFORNIA

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The Fish and Wildlife Service (Bureau of Sport Fisheries and Wildlife 1973) listed the Spotted Owl *(Strix occidentalis)* as a species whose status needed to be determined. Until recently the status of this secretive woodland raptor was unknown by government wildlife agencies and considered to be rare. Furthermore, land practices were reducing the habitat of the Spotted Owl. For these reasons, the California Department of Fish and Game and the United States Forest Service cooperatively initiated and financed this study in July 1973. In 1974 the National Park Service became involved.

In 1973 I conducted surveys in the forested mountains in northwestern California. From March to September 1974 surveys were conducted throughout the remaining areas of coniferous forest in California. During the 1975, 1976 and 1977 breeding seasons, voids in the range were checked and known sites monitored by the author and other agency biologists.

METHODS

Spotted Owls are located easily, especially during the breeding season (March through June) by using recordings or vocal imitations of their calls. Variations of the location call described by Forsman (1975) were used. In surveys where stops were made every one-half mile, owls usually responded to calls within 10 minutes. Frequently, these owls will approach the caller to defend their territory. Apparently only Spotted Owls that are paired adults will respond vigorously to calls (Forsman 1977). Where one owl was located, the mate would usually appear if imitation of calls continued. Sexes can be differentiated by their calls. The call of the female is higher pitched than the male's and she shows a greater use of the contact and agitated contact calls described by Forsman (1975).

Sightings of Spotted Owls noted in this report are limited to those where responses to calls were elicited, where calling was heard, and where pairs or adults with young were observed. Therefore, the locations noted herein should be representative of breeding territories. Though many visual observations have been made of Spotted Owls throughout the state, many of these are not representative of possible breeding territories. Young Spotted Owls disperse in the fall and as a result have produced a number of sightings not truly representative of the owl's habitat. Among the more notable of these are sightings of single individuals at Woodson Bridge State Park, Tehama County, on 24

November 1972; San Diego Sports Arena, San Diego County, on 19 November 1973; Cottonwood Canyon, Riverside County, in November 1973; and Chico Cemetery, Butte County, from 31 January to 1 February 1975.

A search of literature and of museum specimens disclosed 102 historical localities of occurrence. Questionnaires completed by field ornithologists provided another 81 localities. These were used as a basis for establishing surveys. Other localities were checked when convenient.

RESULTS

PAST DISTRIBUTION

Until recently, Grinnell and Miller's (1944) work included the only information available regarding the distribution of the California Spotted Owl *(S. o. occidentalis)* and the Northern Spotted Owl *(S. o. caurina)*. A few additional locality records have been published for the Lake Tahoe area (Johnson and Russell 1962), Sequoia National Park (Sumner and Dixon 1953), the Laguna Mountains (Sams and Stott 1959), and other scattered localities (most notably in *Audubon Field Notes/American Birds*). These sightings are useful in determining the historical distribution of Spotted Owls in California.

California Spotted Owls have been recorded at sites in San Luis Obispo and Monterey counties, outside of the range defined by Grinnell and Miller (1944). Although the majority of sightings from this area have been reported in the last 10 years, Bent (1938) reported Spotted Owls in San Luis Obispo County. Additional extentions have been noted westward to Solvang in Santa Barbara County and south through the Cuyamaca Mountains in San Diego County.

The distribution of California Spotted Owl in the Sierra Nevada has changed little from that described by Grinnell and Miller (1944). Two recent sightings (Cogswell and Pray 1955; Sequoia-Kings Canyon National Park specimen taken 1965) have extended slightly the known range into central Tulare County. Johnson and Russell (1962) found Spotted Owls directly north of Lake Tahoe, only a few miles west of the California-Nevada border. Spotted Owls have not been reported from Nevada, although suitable habitat may exist in the Lake Tahoe area. Prior to this study, Spotted Owls had not been reported from the area between Placer County and Lassen National Park even though this area was included in the range described by Grinnell and Miller (1944).

PRESENT DISTRIBUTION

Spotted Owls, apparently occupying territories, were found at 317 sites in 36 counties (Appendix 1). Of these, 122 sites were in the range of the Northern Spotted Owl and 195 were in the range of the California Spotted Owl (Figure 1).

Two pairs were located east of the previously described range of the Northern Spotted Owl in Shasta and Siskiyou counties. Future survey work in this area may indicate that these pairs near Mt. Shasta City and Lake McCloud are not isolated but are within an area where the population is sparse.

The California Spotted Owl was found in several areas outside of the range described by Grinnell and Miller (1944). In the south coast area, a large northward extension of the previously described range in the coastal mountains through Santa Barbara, San Luis Obispo and Mon-

Figure 1. Distribution of the Spotted Owl *(Strix occidentalis)* in California. The dashed line indicates the range described by Grinnell and Miller (1944). Dots represent localities of presumed breeding territories, 1973-1977.

terey counties was substantiated. Also, a southern extension of the known range in San Diego County through Cuyamaca Rancho State Park and into the Laguna Mountains was noted.

In the southern Sierra Nevada, Spotted Owls were found in Sequoia National Park and on the Sequoia National Forest. These sightings extended the previously known range from the General Grant Grove and Redwood Mountain areas in northern Tulare County, south through Tulare County and into Kern County as far as Breckenridge Mountain.

Sightings of the California Spotted Owl in the remaining Sierran part of its range generally were within the range described by Grinnell and Miller (1944). Sightings made during this study demonstrated a greater continuity in distribution than had been reported previously. Most notable were sightings in El Dorado, Nevada, Yuba, Sierra, Butte and Plumas counties.

Sightings made during this study extended the previously described range into the eastern Sierra Nevada. Numerous records in the upper drainages of the Feather River in Plumas County are east of the boundaries of the old range but there are none in drainages of the east side of this section of the Sierra Nevada. Three sites were identified during this study in the Carson River drainage, an east side drainage, in Alpine County. Presently, these are the only known active sites on the east side of the Sierra Nevada; the site north of Lake Tahoe (Johnson and Russell 1962) was checked and no evidence of the two reported pairs was found.

POPULATION SIZE

Four hundred and eighty-four Spotted Owls (191 Northern, 293 California), presumably representing 317 pairs, were located during this study. An accurate estimation of the statewide population cannot be derived from these figures since the amount of suitable habitat surveyed and the total available have not been calculated.

Enough data have been collected to delineate a number of population concentrations. The largest concentration of Spotted Owls in the state, along the South Fork of the Trinity River and into the Yolla Bolly Wilderness Area, Trinity and Tehama counties, and a major concentration on Point Reyes Peninsula, Marin County, are population centers for the Northern Spotted Owl. The largest concentrations of the California Spotted Owl exist along the Western Divide and in the Greenhorn Mountains, Tulare and Kern counties, Sequoia National Park, Tulare and Fresno counties, northwest of Yosemite Valley, Tuolumne and Mariposa counties, and in the Deep Creek and Green Valley area, San Bernardino County. Populations are scattered in Monterey, San Luis Obispo and Santa Barbara counties. Throughout the remainder of their range Spotted Owls appear to be rather evenly distributed in the available habitat.

Spotted Owl (*Strix occidentalis*) with young in abandoned Goshawk (*Accipiter gentilis*) nest, Hot Springs Creek, Alpine Co., California, 8 June 1977.
Photo by Rick Klme

POPULATION TREND

Since the size of past or present Spotted Owl populations in California is unknown, direct comparisons of population size cannot be made. However, during the study an attempt was made to check a number of historical reports more than 30 years old (Appendix 2). Spotted owls were present at 72% of the historical sites checked.

HABITAT REQUIREMENTS

Elevation, timber type (using United States Forest Service timber type designations), topographic type, water availability and slope exposure were noted at 192 sites where Spotted Owls were found (Gould 1974). The habitat characteristics noted below are representative of territories defended by Spotted Owls.

In the north coast area, Spotted Owls were found frequently from 18 to 250 m elevation, an area dominated by Redwood *(Sequoia sempervirens)* and occasionally Bishop Pine *(Pinus muricata)* (Table 1). Grand Fir *(Abies grandis)*, Douglas-fir *(Pseudotsuga menziesii)*, California Laurel *(Umbellularia californica)*, Red Alder *(Alnus rubra)* and Pacific Madrone *(Arbutus menziesii)* were secondary species in this area.

Douglas-fir was the dominant tree species where Spotted Owls were found between 850 and 1,800 m elevation in the north coast area. At about 16% of the sites Ponderosa Pine *(Pinus ponderosa)* was dominant. Understory hardwoods were Pacific Madrone, Tanoak *(Lithocarpus densiflorus)* and oak (*Quercus* sp.).

Canyon Live Oak *(Q. chrysolepis)* was the dominant tree species at 91% of the locations below 1,100 m elevation where Spotted Owls were found in the south coast area. Frequently California Laurel was found in association with Canyon Live Oak.

Above 1,100 m Ponderosa Pine became dominant. Incense Cedar *(Libocedrus decurrens)*, Sugar Pine *(P. lambertiana)* and Coulter Pine *(P. coulteri)* were dominant at some sites. California Black Oak *(Q. kelloggii)* was the dominant understory at higher elevations. However, as a deciduous oak, it was incapable of providing, by itself, adequate habitat for Spotted Owls.

Spotted Owls were found almost exclusively in the mixed conifer zone, usually dominated by Ponderosa Pine, in the southern Sierra Nevada. The elevation, at sites occupied by Spotted Owls, varied from 825 m in Mariposa County to 2,300 m on Big Baldy Ridge in northern Tulare County. South of Amador County most sites were between 1,100 and 2,200 m elevation. Sugar Pine, White Fir *(Abies concolor)*, Giant Sequoia *(Sequoia gigantea)*, Douglas-fir, Incense Cedar, and California Black Oak were present with the Ponderosa Pine. Jeffrey Pine *(P. jeffreyi)* was present at only 8 of 58 sites where Spotted Owls were

found in the southern Sierra Nevada and where the timber type was noted. None were located in the higher elevation timber types dominated by Red Fir *(A. magnifica)* and Lodgepole Pine *(P. contorta).*

Spotted Owl *(Strix occidentalis),* Hot Springs Creek, Alpine Co., California, spring 1977.

Photo by Rick Kline

Table 1. Dominant timber types at 192 sites defended by Spotted Owls in California (Gould 1974). Comparative points were distributed on the frequency of occurrence of a timber type in the quarter quarter section where owls were located. Two points were given to the most common or major timber type in the quarter quarter section. One point was given to the second most common or minor timber type, provided it covered more than approximately 20% of the quarter quarter section, and three points were given to a timber type if it covered more than 80% of the quarter quarter section. This system considers minor timber types as well as major timber types at each site.

	Points for Timber Type						
	North Coast		South Coast		Sierras		
Timber Type	Redwoods	Doug. fir	Hardwoods	Conifer	South Mixed	North Mixed	Total
Douglas-fir	—	83	—	—	2	4	89
" dominant	—	36	—	—	4	19	59
Yellow pine	—	21	—	13	39	2	75
" dominant	—	1	—	4	44	21	70
Sugar Pine	—	1	—	2	2	—	5
" dominant	—	2	—	2	41	7	52
Bishop Pine	9	1	—	—	—	—	10
" dominant	—	—	—	—	—	—	—
Coulter Pine	—	—	—	—	—	—	—
" dominant	—	—	—	2	—	—	2
White Fir	—	—	—	—	6	2	8
" dominant	3	1	—	—	39	20	63
Redwood	47	—	3	—	—	—	50
" dominant	3	—	—	—	—	—	3
Giant Sequoia	—	—	—	—	—	—	—
" dominant	—	—	—	—	17	—	17
Incense Cedar	—	—	—	—	—	—	—
" dominant	—	—	—	6	3	—	9
Hardwoods	1	5	—	—	—	—	6
Calif. Laurel	—	—	5	—	—	—	5
Calif. Black Oak	—	—	—	3	—	—	3
Canyon Live Oak	—	—	19	—	—	—	19
" dominant	—	—	6	1	—	—	7
Noncommercial lands	—	2	—	—	1	—	3

North of Amador County, in the Sierra Nevada, Douglas-fir and White Fir approached Ponderosa Pine as being the most frequent dominant tree species. Most sites were between 1,100 and 1,700 m in elevation. The only sites where Spotted Owls were located in Red Fir occurred in Red Fir-White Fir associations on two occasions each in Plumas and Tehama counties and once each in Fresno and Tulare counties.

Generally, in areas occupied by Spotted Owls, the quality of the forest was quite similar: a multi-layered forest with a diversity of tree species. Trees in the dominant timber type were larger than 0.83 m d.b.h. at 83% of the sites and were classed as moderately decadent to decadent. The canopy closure of the trees was at least 40% at 90% of the sites. Canopy height varied with forest type, but allowed flight space for the owls under the canopy.

Spotted Owls were found on the lower slopes of canyons at 89% of the sites. Water courses were present within 0.3 km of 90% of the sites. Spotted Owls were found on slopes with a northern exposure more than on slopes with other exposures.

HABITAT DISTURBANCES

Fire must be considered when determining the permanency of occupation of any Spotted Owl territory. Within the last three years fires came close to destroying habitat at three occupied territories in the Los Angeles area. One site is believed to have been abandoned.

Human occupation and usurpation of habitat are major factors affecting populations of Spotted Owls today. Fourteen percent of 192 sites where the degree of human use was noted are in areas heavily used by humans. These sites include Yosemite Valley and Muir Woods National Monument with millions of visitors annually and the town of Idyllwild, basically a vacation home community. The key to the owl's continued occupation of these territories seems to be the quiet, apparently unperturbed disposition of the owl, the absence of disturbance in the still dense forest canopy, and the availibility of habitat away from human disturbance.

Logging and other forest cutting practices appear to be the major causes making forest habitat unsuitable for Spotted Owls. Two adjacent sites reported occupied in 1960 and 1961 (Johnson and Russell 1962) were unoccupied in 1974. Since originally reported, both sites had been logged, removing approximately 80% of the canopy over 80% of the area around the sites. The destruction of the habitat apparently caused the owls to abandon their territories. Habitat destruction, usually involving logging, was the major cause believed responsible for the absence of Spotted Owls at five historical sites checked (Appendix 2).

In some areas where sufficient forest remains, Spotted Owls exist adjacent to areas that have been clear cut. On the Sequoia National Forest a series of adjacent drainages with similar habitat was checked for Spotted Owls. Areas with extensive clear cutting did not support owls, but less heavily cut areas of similar habitat did. The amount of area that could be clear cut and still have the area support a pair of Spotted Owls varied with habitat quality. On the Sequoia National Forest, high quality habitat appeared to contain groves of Giant Se-

quoia. These areas could maintain Spotted Owls with as much as 30% of the habitat clear cut. In lower quality habitat Spotted Owls were present with a maximum of only 10% of the available habitat removed by clear cutting.

DISCUSSION

Spotted Owls are more widely distributed in California than previously believed. Even considering that habitat remains unchecked and that only a portion of the total population is reported here, the total numbers of this species are still quite small. I believe that the majority of prime habitat in the state has been surveyed during this study, and that not more than twice the number of pairs reported here can exist.

The extensions noted in the range of the Spotted Owl in California probably are not expansions in range; rather, they reflect greater effort to locate this species in areas previously overlooked.

Upon further investigation gaps in the range of the Spotted Owl may prove to be occupied. Checks of sightings made by cooperators in San Mateo and Santa Cruz counties, north and east of Lake Almanor in Lassen and Modoc counties, and on the east side of the Sierra Nevada in Mono County were negative. Perhaps those areas are marginal, and do not support breeding individuals. Also, a single night's check may have been inadequate to locate owls in these areas; this seems improbable though, because 15 surveys were run in these areas and Spotted Owls were found on approximately 60% of all surveys made.

The recent discovery of a pair of Spotted Owls near Lake McCloud, in north central Shasta County, presents the possibility of others in this area and further east on the Modoc Plateau.

Sites near Red Bluff, in the upper Sacramento Valley, although reportedly occupied, were not checked. No surveys were made in Amador County; however, the habitat here is continuous with adjacent areas along the western slope of the Sierra Nevada where Spotted Owls exist.

The assumptions that 28% of historical sites no longer support Spotted Owls and that populations have been reduced proportionally are questionable. Historical sites may not have been accurately described to facilitate relocation and some surveys may not have exposed owls which actually were present. But, for several reasons, this presumed reduction in population size probably is conservative. Early ornithologists may not have checked areas where logging has since occurred. Historical sites still occupied may have supported more pairs formerly than early reports indicate. And even though some historical sites were not accurately described, Spotted Owls are easily located and have been relocated at some ambiguously described, 70 year old sites. Finally, the recent expansion of usable habitat for Spotted Owls probably is nil.

Habitat types of areas maintaining Spotted Owls, although diverse, are similar. The multi-layered, evergreen forest, containing a variety of species, provides a diverse habitat for prey species. The decadent nature of the mature forest occupied by Spotted Owls provides nest sites in cavities or in broken topped trees. Even in mature evergreen forests, tree reproduction usually is occurring, and dense groves of young trees combined with a closed forest canopy provide protection from adverse weather for both owls and prey species. This protection from warm weather is apparent in the location of territories close to water and on north facing slopes in canyon situations.

It appears that human usurpation of habitat has had an adverse effect on Spotted Owl populations. Logging apparently has been responsible for the abandonment of territories, and although Spotted Owls still may be found in some areas of high human use or logging, the true measure of their population stability, their recruitment rate, is unknown.

SUMMARY

The distribution, population size, and basic habitat requirements of the two subspecies of Spotted Owl found in California are discussed. Expansions of the previously described range were noted in two areas along the eastern edge of the range in the north coast area, north to Monterey County and south in San Diego County in the south coast area, and south into northern Kern County in the Sierra Nevada. Also, the continuum of the range in the northern Sierra Nevada was confirmed.

One hundred and ninety-one Northern and 293 California Spotted Owls, believed to represent 122 and 195 pairs, respectively, were located during this study. Six areas of major population concentrations were identified. Comparing historical site occupation with present occupation of these sites indicates a reduction of 28% in population size.

Spotted Owls were located most frequently in dense coniferous forests at elevations from less than 30 to 2,300 m above sea level. Dominant tree species varied from one geographic area to another, but all were evergreen. Generally, forests at sites occupied by Spotted Owls were mature and multi-layered, had trees greater than 0.83 m d.b.h., contained a variety of tree species, displayed a moderate degree of decadence, and formed a canopy where the closure was greater than 40%. Spotted Owls usually were found in canyon situations, on north facing slopes, and within 0.3 km of water.

Human usurpation of habitat appears to be the major detrimental effect on Spotted Owl populations in California.

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APPENDIX 1

Listed below are the most recent California records (through 1977) of which I am aware. Records are listed by county and within the county by chronological order in which they were found; however, dates and names correspond to the most recent report for each location. Numbers in parenthesis indicate the number of territories at that general location.

Individuals responsible for multiple sightings listed below are noted with the following abbreviations: Katherine Balderston, KB; Cameron Barrows, CB; Tom Beck, TB; Margaret Bell, MB; Dennis Clemins, DCl; Dave Connell, DC; Jim Cook, JC; Nicolle Culbertson, NC; Larry Forbis, LF; Bob Gale, BG; Dave Garber, DG; Gordon Gould, GG; Bill Harvey, BH; Jerry Ingco, JI; Andrew Lovato, AL; Kathy Lucich, KL; Tom Newman, TN; Point Reyes Bird Observatory, PRBO; Bernie Rios, BR; and Jim Snowden, JS. Individuals in parenthesis were responsible only for conveying sightings to me.

To reduce the likelihood of owl disturbance, locality descriptions are given in general terms. More precise locality data, for use by land management agencies, are available in Department of Fish and Game files in Sacramento.

Alpine Co. Pleasant Valley Creek: early June 1976, Rick Kline. Hot Springs Creek: 8 June 1977, Rick Kline. East Fork Carson River: 1 July 1976, Wally Sumner.

Butte Co. Butte Creek: 20 June 1975, JS. Forest Ranch: 3 June 1977, JS. Big Kimshew Creek: Oct. 1976, JS. Flea Mountain: Nov. 1976, JS. Mooreville Ridge: 25 May 1977, TN.

Calaveras Co. Summit Level Ridge: 30 May 1974, TB. Calaveras Big Trees: 24 July 1976, Margaret Keith. Doud Hill: 31 May 1974, GG, Dave Sinclair. North Fork Stanislaus River: 15 June 1975, Ron Jurek.

Colusa Co. South Fork Stony Creek (2): 12 July 1794, BR.

Del Norte Co. Jed Smith State Park: 18 Aug. 1973, GG. South Fork Smith River (2): 1 Aug. 1973, DG, GG, and 15 Aug. 1973, GG. South Siskiyou Fork Smith River: 15 Aug. 1973, GG.

El Dorado Co. Big X Mountain: 9 June 1974, GG, Warren Kelly. Camp Creek: 7 June 1974, GG, Warren Kelly. North Fork Consumnes River: 8 June 1974, GG, Warren Kelly.

Fresno Co. Shaver Lake: 3 June 1974, BG, GG. Bald Mountain: 2 June 1974, BG, GG. Dinkey Creek: 2 June 1974, BG, GG. Patterson Mountain: 1 June 1974, BG, GG. Wilsonia: 15 June 1975, NC. Kings Canyon: 8 June 1974, John Bosworth. Hall Mountain (2): 13 Aug. 1975, Calson, and 12 Mar. 1974, BG. Mammoth Pools Reservoir: 13 Aug. 1974, BG. Kaiser Peak: 25 Aug. 1975, McCarty, Stabler. Dinkey Creek: 13 Aug. 1975, McCarty, Stabler. Tornado Creek: 18 June 1975, NC. Hall Mountain: Sept. 1976, Ed Toth.

Glenn Co. Black Butte: 20 July 1974, GG, BR.

Humboldt Co. Blue Creek: 27 Aug. 1973, DG, GG. Prairie Creek State Park: 5 Aug. 1973, GG. Redwood Creek, Redwood National Park (4): 9 Sept. 1973, GG. Packsaddle Ridge (2): 16 Aug. 1973, DG, GG and 17 Aug. 1973, GG. Grizzly Creek State Park: April 1973, Stan Harris, Ron LeValley. Mattole River: 10 July 1974, Bill Clow. King Range: 24 July 1973, Jack Booth, GG. Richardson Grove State Park: 28 June 1973, Bob LaBelle. Charles Mountain: 20 May 1977, Doris Horn, Sharon Whisler. Eel River (2): 21 May 1977, GG. South Fork Eel River: 21 May 1977, GG, Sarah Gould. Gilham Butte (2): 31 May 1977, Doris Horn, Sharon Whisler.

Kern Co. Sunday Peak (2): 6 July 1975 and 22 May 1975, NC. Greenhorn Summit: 21 May 1975, NC. Breckenridge Mountain (2): 23 May 1975, NC.

Lake Co. Crockett Peak: 11 July 1974, GG, BR.

Los Angeles Co. Arroyo Seco: 2 Apr. 1977, Arthur Langton, Jr. Mt. Wilson: 17 Apr. 1974, GG. Little Rock Creek: 19 Apr. 1974, GG. San Dimas Experimental Forest: 18 Apr. 1974, GG, Jack Spruill. Potato Mountain: Apr. 1977, (Daniel Guthrie). Prairie Fork San Gabriel River: 17 Oct. 1975, GG.

Madera Co. Speckerman Mountain (3): 5 Aug. 1975, BG, 5 June 1974, GG. Jackass Butte: 5 June 1974, BG, GG. Minarets Work Center: 5 June 1974, GG. Chiquito Creek: 5 June 1974, BG. West Fork Chiquito Creek (2): 4 June 1974, BG, GG and 1975 BG. Mammoth Pools Reservoir: 4 June 1974, BG, GG.

Marin Co. Tomales Bay State Park (2): 8 Feb. 1974, GG and 15 Mar. 1974, Dick Brown, GG, Grace Miller. Inverness: 15 Mar. 1974, Dick Brown, GG, Grace Miller. Bear Valley: 17 Mar. 1974, GG. Inverness Ridge (2): 16 Mar. 1974, GG, Tom Vaughn. Palomarin (2): Aug. 1977, (PRBO) and 1972 (PRBO). Samuel P. Taylor State Park (2): 13 Mar. 1974, GG and 13 Mar. 1974, GG,

John Trenmer. Lagunitas Creek: 19 Mar. 1974, GG. Bolinas Ridge: Apr. 1977, (KB, CB). Muir Woods National Monument: 7 Aug. 1975 (National Park Service). San Geronimo Creek: Aug. 1977, KB, CB. Phoenix Lake: 1977, (PRBO).

Mariposa Co. Shingle Hill: 26 May 1974, TB, GG. Buck Meadows (2): 27 May 1974, TB, GG. Smith Ridge: 27 May 1974, GG, John Wells. Bower Cave: 27 May 1974, TB, GG. Big Grizzly Mountain: 26 May 1974, TB, GG, John Wells. Big Meadow (2): 20 May 1974, GG, Dale Harmes. Feliciana Mountain: 5 June 1974, BG, GG. Jerseydale: 5 June 1974, BG, GG. Heness Ridge (2): 18 May 1974, GG, Herb Sansum. Yosemite Valley: 20 May 1974, GG, Dale Harmes. Wawona: 19 May 1974, GG, Herb Sansum.

Mendocino Co. Russian Gulch State Park: 5 Mar. 1974, GG. Jackson State Forest: 4 Mar. 1974, GG. South Fork Big River: 28 June 1975, Oliver Kolkman. Bald Mountain (2): 11 July 1974, GG, BR. Point Arena: 6 Mar. 1974, GG. Ornbaum Valley: 6 Mar. 1974, GG. Little Red Mountain: 8 June 1977, Doris Horn, Sharon Whisler. Iron Peak: 1975, Ted Wenzel. South Fork Eel River (3): Aug. 1977, KB, CB and 9 June 1977, Doris Horn, Sharon Whisler.

Monterey Co. Chew's Ridge: Aug. 1977, (Ronald Branson). Nacimiento Summit (2): 29 Mar. 1974, GG, Don Pine. Carmel Valley: 28 Dec. 1976, (Ronald Branson).

Nevada Co. Banner Peak: 11 June 1974, DC, GG. Steephollow Creek: 12 June 1974, DC, GG. Burlington Ridge: 11 June 1974, DC, GG. Poorman Creek: 13 June 1974, DC, GG. Nevada City: 1974, (DC). South Fork Yuba River (2): 12 June 1974, DC, GG and 8 June 1976, AL.

Orange Co. Trabuco Peak: 11 June 1974, Peter Bloom.

Placer Co. Mosquito Ridge (2): 10 June 1974, DC, GG. Duncan Peak: Aug. 1975, Phil Tuma. Secret Canyon: 11 June 1976, AL.

Plumas Co. Swain Mountain: 9 Aug. 1974, Gary Davis. Mosquito Ridge: 19 June 1974, GG, JI. North Fork Feather River: 19 June 1974, GG, JI. Round Valley: 21 June 1974, JI. Moonlight Peak: 20 June 1974, GG. Lights Creek: 27 June 1974, JI. Duffy Dome: 18 June 1974, GG, Karl Kahre. Rock Creek (2): 3 July 1974, Stewart McCormick. Quincy (2): 17 June 1974, GG, Stewart McCormick and Sept. 1977, TN. Middle Fork Feather River: 22 July 1974, (Stewart McCormick). Mills Peak: 19 July 1974, Stewart McCormick. Grizzly Creek: 27 Feb. 1976, (Mike McCullom). Snake Lake: 30 June 1977, TN. Bucks Lake: 16 Sept. 1975, TN. Mooreville Ridge: 25 May 1976, TN.

Riverside Co. Black Mountain: 18 June 1976, JC, GG. Mount San Jacinto: 18 June 1976, JC, GG. Strawberry Valley: 18 June 1976, JC, GG. Thomas Mountain: 26 Apr. 1974, GG.

San Bernardino Co. Mount Baldy: 1976, JC. Wrightwood (2): 1976, JC. Green Valley Lake: 26 Sept. 1976, JC, GG. Crafts Peak (2): 1976, JC and 26 Sept. 1976, JC, GG. Delamar Mountain: 1976, JC. Lytle Creek Ridge: 1976, JC. North Fork Lytle Creek: 1976, JC. Middle Fork Lytle Creek: 1976, JC. Silverwood: 1976, JC. Skyforest: 1976, JC. Deep Creek (2): 1976, JC. Heaps Peak (2): 1976, JC. Butler Peak: 1976, JC. Timber Mountain: 1976, JC. Barton Creek (2): 1976, JC. Jenks Lake: 1976, JC. Poopout Hill: 1976, JC. Santa Ana River (2): 25 Aug. 1976, JC and 24 Sept. 1976, Vernon Bleich, GG. Mill Creek: 1976, JC.

San Diego Co. Palomar State Park: 29 Apr. 1974, GG, BH. Palomar Mountain: 29 Apr. 1974, GG, BH. San Diego River: 30 Apr. 1974, GG, BH. North Peak: 30 Apr. 1974, GG, BH, Harold McKinnie. Cuyamaca Rancho State Park (2): 30 Apr. 1974, GG, BH, Harold McKinnie. Laguna Mountain: 28 May 1975, BH.

San Luis Obispo Co. Lopez Reservoir: 5 Apr. 1974, GG. Huasna: 5 Apr. 1974, GG. Cuyama River: 24 Aug. 1974, David Murdock, Turalu Murdock.

Santa Barbara Co. Gaviota Peak: 26 May 1975, Parkinson. Figeroa Mountain: 9 Apr. 1974, GG. New Cuyama: 2 June 1976, GG, Gary Stacey.

Shasta Co. Little Black Rock: 3 July 1974, GG, KL. Lake McCloud: 22 Sept. 1975, KL.

Sierra Co. Oregon Creek: 14 June 1974, DC, GG. Middle Yuba River: 13 June 1974, DC, GG. Canyon Creek (2): 21 July 1975, TN. Saddleback Mountain: 23 June 1976, AL.

Siskiyou Co. Thompson Creek: 18 July 1973, GG. Condrey Mountain: 13 Aug. 1975, LF. Grider Ridge: 7 Aug. 1973, GG. Dillon Mountain: 8 Aug. 1973, GG. Trail Mountain: 16 Aug. 1973, DG, GG. Salmon Mountain: 9 Aug. 1973, GG. Sawyers Bar: 13 Sept. 1973, LF, GG. Crawford Creek: 28 Sept. 1973, Doug Claypole, GG. Happy Camp: 1975, Carl Wolf. Box Canyon Reservoir: Sept. 1976, Becky Aus-Provart, KL. Ukonom Mountain: 3 June 1976, LF. Bald Mountain: Aug. 1976, Ben Harbour. Gazelle Mountain: (BLM—Redding). Cow Creek: June 1974, LF. Ten Bear Mountain: June 1977, LF.

Sonoma Co. Guerneville: 28 May 1977, GG. Monte Rio: 11 Mar. 1974, Allan Buckman, GG. Willow Creek: 28 May 1977, GG.

Tehama Co. Anthony Peak: 9 July 1974, GG, BR. Thomes Creek (4): 29 May 1974, BR and 8 July 1974, GG, BR and 7 June 1974, Cloyd Cleghorn. Mineral: 24 June 1974, Gary Davis, GG. Mill Creek: 25 June 1974, Gary Davis, GG. Morgan Mountain (2): 21 June 1974, GG. South Fork Cottonwood Creek (3): 24-25 July 1974, KL. Round Mountain: 16 July 1974, KL.

Trinity Co. Ironside Mountain: 19 July 1973, GG. Big Creek: 31 July 1974, KL. East Creek: 1 July 1974, KL. Miller Springs: 5 Sept. 1973, GG. Lemonade Spring: 3 July 1974, GG, KL. Klondike Mine: 6 Sept. 1973, GG. Collins Creek: 2 July 1974, GG, KL. Silver Creek: 12 Sept. 1973, GG. South Fork Trinity River: 12 Sept. 1973, GG. Bierce Creek: 7 Sept. 1973, GG. Happy Camp Creek: 7 Sept. 1973, GG. Bierce Ridge: 24 Sept. 1973, GG. Raspberry Gulch: 11 Sept. 1973, GG. Red Mountain (2): 11 Sept. 1973, GG. East Fork Smoky Creek: 30 June 1974, KL. Middle Fork Smoky Creek: 12 Sept. 1973, GG. Rattlesnake Ridge: 12 Sept. 1973, GG. Granite Peak: 24 Aug. 1974, KL. East Fork Trinity River (2): 5 Sept. 1974, KL. Big French Creek (2): 8 Aug. 1974, KL. Hyampom Mountain: 4 Aug. 1974, KL. Pattison Peak: 6 Aug. 1974, KL. Corral Creek: 5 Aug. 1974, KL. Wells Mountain: 3 Aug. 1974, KL. Clear Creek: 11 July 1974, KL. Horse Ridge (2): 13 Aug. 1974, KL. Van Horn Peak: 13 Aug. 1974, KL. East Fork South Fork Trinity River: 17 July 1974, KL. Plummer Peak: 1974, Herrett. North Yolla Bolly: 18 July 1974, KL. Stockton Ridge: 23 July 1974, KL. Brooks Ridge: 22 July 1974, KL. Buckeye Ridge: 13 Sept. 1974, KL. Stuart Fork: 1974, KL. Lewiston Reservoir: 12 Dec. 1976, Phil Detrich, Stephen Laymon. Casoose Creek: June 1976, Brandon, Phil Detrich, Kahle.

Tulare Co. Redwood Mountain (3): 13 May 1974, GG, Dave Parsons and 16 June 1975, NC. Generals Highway (3): 12 May 1974, GG, R. Smith and 13 May 1974, GG, Dave Parsons. Little Baldy (2): 13 May 1974, GG. Giant Forest (2): 11 May 1974, GG. Clough Cave: 16 May 1974, GG, Walt Hoffman, Maurice Zardus. Rogers Camp (2): 19 June 1975, NC. South Fork Middle Fork Tule River: 8 May 1974, GG. Lloyd Meadows: 9 May 1974, GG. Trout Meadows: 9 May 1974, GG. Table Mountain (2): 3 May 1974, MB, GG and 11 June 1975, NC. Hatchet Peak: 5 May 1974, GG. Cold Springs Peak: 6 May 1974, MB, GG. Packsaddle Meadow: 6 May 1974, MB, GG. Deer Creek: 9 June 1975, NC. Sugarloaf Peak: 30 June 1975, NC. Hellum Creek: 30 June 1975, NC. Tobias Peak: 10 June 1975, NC. Speas Creek: 12 June 1975, NC. Johnsondale: 25 June 1975, NC. Black Mountain: 17 June 1975, NC. Jordan

Peak: 26 June 1975, NC. Woodward Creek: 11 June 1975, NC. Mineral King: 1975, NC. Camp Nelson: 1975, NC. Onion Meadow Peak: 11 June 1975, NC.
Tuolumne Co. Calaveras Big Trees: 29 May 1974, GG. Middle Fork Stanislaus River (2): 29 May 1974, TB, GG and 10 June 1974, DCl. Pikes Peak (2): 3 June 1974, DCl. South Fork Stanislaus River: 30 May 1974, DCl. Dodge Ridge (2): TB, DCl, GG. Shanahan Flat: 27 May 1974, TB, GG, John Wells. South Fork Tuolomne River: 27 May 1974, TB, GG. Pilot Peak: 28 May 1974, TB, GG. Ackerson Meadow: 22 May 1974, GG, Herb Sansum. Crane Flat: 21 May 1974, GG, Dale Harmes.
Ventura Co. Quatal Canyon: 27 July 1977, (Phil Schempf).
Yuba Co. Bullards Bar Reservoir: 22 June 1976, AL.

APPENDIX 2

The following are locations of Spotted Owls known prior to 1950 which were checked for occupancy during this study. The first date given indicates date first located; second date indicates when Spotted Owls were relocated on these territories.

Locations where owls are still present:

Palomar Mountain, San Diego Co.: June 1892, 29 April 1974. Calaveras Big Trees, Calaveras Co.: 22 Aug. 1900, 29 May 1974. Arroyo Seco, Los Angeles Co.: 22 Oct. 1900, 17 Apr. 1974. San Dimas Experimental Forest, Los Angeles Co.: 14 Feb. 1903, 18 Apr. 1974. Mount Wilson, Los Angeles Co.: 21 Mar. 1905, 17 Apr. 1974. Strawberry Valley, Riverside Co.: prior to 1913, 25 Apr. 1974. Thomas Mountain, Riverside Co.: prior to 1913, 26 Apr. 1974. Yosemite Valley, Mariposa Co.: 24 June 1915, 20 May 1974. Feliciana Mountain, Mariposa Co.: 30 Oct. 1915, 5 June 1974. Kings Canyon, Fresno Co.: 12 Sept. 1916, 15 May 1924. South Fork Mountain, Trinity Co.: 9 Dec. 1917, Sept. 1973. Shingle Hill, Mariposa Co.: 23 July 1920, 26 May 1974. South Fork Tuolumne River, Tuolumne Co.: 15 June 1922, 27 May 1974. Bower Cave, Mariposa Co.: 16 June 1974, 27 May 1974. Ornbaum Valley, Mendocino Co.: 1924-37, 6 Mar. 1974, Monte Rio, Sonoma Co.: prior to 1927, 11 Mar. 1974. Mineral, Tehama Co.: 1929, 24 June 1974. Jackson State Forest, Mendocino Co: 26 May 1932, 4 Mar. 1974. Redwood Mountain, Tulare Co.: 1933, 13 May 1974. Giant Forest, Tulare Co.: 1933, 11 May 1974. Lost Grove, Tulare Co.: Sept. 1941, 12 May 1974. Samuel P. Taylor State Park, Marin Co.: 6 Nov. 1943, 13 Mar. 1974. Little Black Rock, Shasta Co.: 8 June 1947, 3 July 1974.

Locations where owls were not found:

Little Tujunga Canyon, Los Angeles Co.: 1888. Shackleford Creek, Siskiyou Co.: 1899. Millard Canyon, Los Angeles Co.: 1902. Pacoima Canyon, Los Angeles Co.: 1912. Ferndale, Humboldt Co.: 1913. Near Kelly's, Tehama Co.: 1925. Hendy Woods, Mendocino Co.: early 1930s. Mount Pinos, Kern Co.: prior to 1933. General Grant Grove, Tulare Co.: 1940.

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THE SPOTTED OWL AT ZION NATIONAL PARK, UTAH

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The first sighting of the Spotted Owl *(Strix occidentalis)* at Zion National Park was on 9 November 1963 (Wauer and Carter 1965). Although a pair was closely observed by Theron Twogood on 29 August of the following year, there were no more reports of this uncommon western owl for several years. Then, between 1974 and 1976, employees at Zion carefully identified this species at six different locations. In 1974 a total of six Spotted Owls was observed at three locations. In 1975 one of the 1974 sites was found inactive but a new one was discovered; a total of five owls was at three locations. In 1976 two new locations were found and, although two previously active sites were not investigated, five owls were seen at four locations. In light of the scarcity of information on the Spotted Owl in Utah (Behle and Perry 1975), these sightings are certainly heartening.

A brief look at the owl's habitat in Zion might help explain its abundance. All six locations show important geologic and climatic similarities. All sightings have been in or around very narrow, steep-walled canyons cut out of the Navajo sandstone formation by intermittent streams at an elevation of approximately 1560 m. Because of the highly resistant lower red portion of the Navajo, it is not unusual to find many canyons at this elevation. Owl canyons 1 and 2 are excellent examples of "hanging" canyons, left suspended about 270 m above, and on opposite sides of, the floor of Zion Canyon, which is about 1290 m at this point. They are no more than 15 m wide in most places with walls rising mostly vertically about 360 m. Both canyons are about 1.6 km in length. Canyon 3 is about 11.2 km long and was formed by a major tributary of the Virgin River. It is also about 360 m deep and at the place where the owl was seen is as narrow as canyons 1 and 2. Canyons 4 and 5 are extremely narrow, cool, vegetation-choked crevices that have eroded along fractures in the sandstone and run at steep angles into canyons of much larger size. Canyon 6 deviates from the usual pattern, being more open and thus warmer than the others. It does, however, have a few cool, vegetated crevices near the place where the owls were consistently seen. The approximate distance between each canyon and the nearest other canyon where owls were located is as follows: Canyon 1-canyon 2, 1.6 km; canyon 2-canyon 3, 5.6 km; canyon 2-canyon 4, 7.2 km; canyon 4-canyon 5, 2.4 km; canyon 5-canyon 6, 5.6 km.

The high elevation and extreme narrowness of these canyons and crevices results in summer temperatures perhaps 20°F cooler than one would expect at the bottom of Zion Canyon or on the plateau above. Outside the visitor center, at the bottom of Zion Canyon, temperatures may be close to 38°C during June, July and August with the plateau

only slightly cooler. The comparative coolness of the canyons is reflected in the growth of such trees as White Fir *(Abies concolor)*, Douglas Fir *(Pseudotsuga menziesii)*, Bigtooth Maple *(Acer grandidentatum)* and Boxelder *(A. negundo)* on their floors. Sixty-five percent of our sightings have been of an owl or owls perched at midday in this lush canyon bottom vegetation. A few Ponderosa Pines *(Pinus ponderosa)*, Gambel Oaks *(Quercus gambelii)* and Shrub Live Oaks *(Q. turbinella)* are mixed in, but generally grow along the more exposed upper walls and rim, and are common on the plateau. The apparent absence of this owl from the plateau and the bottom of Zion Canyon further emphasizes the importance of these cool canyons. Also, as it has been noted in Arizona (Phillips et al. 1964), Spotted Owls appear to be absent from most or all areas inhabited by Great-horned Owls *(Bubo virginianus)*, which at Zion are common everywhere except in these narrow canyons.

The abundant elevated potholes and crevices in the walls of these canyons may be very important to Spotted Owls as nest sites. Although no nests have been discovered, there is excellent evidence that the Spotted Owl is nesting successfully. In five of the six locations two adults, a young bird or all three have been seen on at least one occasion in the last three years. Pairs were noted at canyon 1 on 3 July 1975, at canyon 2 on 23 June, 13 and 22 August and 5 September 1976, and a pair with one young was at canyon 6 on 18 July 1974. This young owl was seen again on the night of 22 July. With the aid of flashlights observers could see distinct horizontal barring on the breast and clumps of down still in evidence there and on the belly. The young owl shrieked continually, especially in response to a prey-bearing adult. Two other well-developed young have been reported. One was perched with a single adult at canyon 4 on 9 August 1974 and one was perched alone at canyon 3 on 4 September 1975. Both were identified as young by the remaining tufts of down.

Woodrats may be an important source of food for these owls. The skulls of four woodrats (probably *Neotoma lepida*) and a pocket gopher (*Thomomys* sp.) were found in five pellets collected under a perch at canyon 2 on 23 June 1976. An adult passed to a young what appeared to be a woodrat on the night of 22 July 1974 at canyon 4. The fledgling experienced continued difficulties in trying to swallow the large rodent. At canyon 2 the casing of a rhinoceros beetle (subfamily Dynastinae) was found in a pellet collected on 3 September 1976.

The Spotted Owl has responded readily upon two occasions to taped recordings played in spring and early summer. In mid-May 1976 Tom Boner of the Utah Division of Wildlife Resources called in and recorded a single adult at canyon 4 by playing Spotted and Barred owl calls taken from Kellogg et al. (1962). The second response was on the night of 23 June 1976 when Nancy Sprague, Donna Sakamoto and I entered canyon

2 hoping to verify the presence of Spotted Owls there. At 2015, while it was still light, we heard the "ho ho-ho hooo" call of a Spotted Owl from somewhere up in the canyon. At 2030 one flew to a perch 3.6 m up in a White Fir about 7.5 m away from us. At 2045 it was joined by its mate. They perched together for 15 minutes before moving away in the approaching darkness. At 2119 I played a short Spotted Owl recording and immediately both birds flew back and perched about 6.5 m above us. For 10 minutes they made an incredible variety of calls. They began with a series of short barks very similar to those of a small dog, and apparently designed to drive the intruder away. Occasionally one

Spotted Owls *(Strix occidentalis).* Zion National Park, Utah, 3 July 1975.
Photo by K. Kertell

would issue a series of 10-13 hoots changing quality at the end, sounding like "hohohohohohohohoho hu hu hu," as described by Burton (1973). After about 7 minutes of this and as the owls began moving away, apparently losing interest, they began giving whistles and a few "ho ho-ho hooo" songs.

The Spotted Owl appears to be enjoying excellent success at Zion National Park. With the large number of relatively inaccessible canyon sites meeting the owl's habitat demands at Zion, and in the surrounding plateau country, there is every reason to believe the owl will continue to thrive.

ACKNOWLEDGMENTS

I wish to thank Superintendent Robert Heyder, Biologist Hank McCutchen and Ranger Peter Scott for encouragement and advice. I am also grateful to all those individuals who reported their sightings.

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NOTES

THE LITTLE BLUE HERON IN CALIFORNIA

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On 4 July 1976 William T. Everett, Curtis Stuteville and I discovered an adult Little Blue Heron *(Egretta [=Florida] caerulea)* near the mouth of the New River at the south end of the Salton Sea, Imperial County. This bird was perching in an area of drowned trees along the shore of the Sea. The Little Blue Heron was similar in size and shape to the several Snowy Egrets *(E. thula)* available for comparison nearby, but without any bushiness to the head, so the head appeared smaller and the neck narrower. The neck was held tightly against the body when the bird was perching. The entire body posterior to the neck was bluish-gray, darker than the body color of nearby Great Blue Herons *(Ardea herodias)*. The head and neck were deep purplish-gray, contrastingly darker than the rest of the body. The bill was distinctly bicolored; medium gray basally, blackish distally. The legs and feet were dark.

This or a similar bird could usually be relocated each time the area was visited until 14 August, when it was last seen. A Little Blue Heron had also been seen at this locality on 3 July by Gilbert S. Grant (Guy McCaskie pers. comm.). On 17 July, when Guy McCaskie, Robert and Elizabeth Copper, and I visited the New River mouth, two or more birds were suspected to be present, although no more than one individual was ever visible at one time. Don V. Tiller reported up to four adult Little Blue Herons present in this area during August (McCaskie pers. comm.).

The Little Blue Heron is a rare bird in California. The first reliable record for the state was an immature discovered at Bodega Bay, Sonoma County, on 7 March 1964 and collected on 15 March 1964 (Jeter and Paxton 1964). The species had been reported several times previously, but the identifications were unsupported or in error. Since 1964 Little Blue Herons have been found with increasing frequency, and may well have nested in the San Francisco Bay area. There are now some 37 state records, with one additional specimen (see Appendix).

Little Blue Herons have been recorded in three general areas of California, with one exception (the record for Inyo County). These three areas are the Salton Sea region, coastal southern California, and the San Francisco Bay area. In each of these areas the species' status is different.

At the Salton Sea the Little Blue Heron appears to be primarily a summer visitor. At least seven individuals have been found at this season, five adults and two "calico" plumaged birds. Palmer (1962) indicated the "calico" plumage represents birds in their second year, but Dickerman and Parkes (1968) found great individual variation in the plumage of immature Little Blue Herons, and considered their plumage sequences still unresolved. There is also one winter record of an adult at the Sea. The identification of the two immatures found near Westmorland on 5 October 1969 (McCaskie 1970) is possibly in error (McCaskie pers. comm.). The presence of adult Little Blue Herons in summer at the Sea in or near active colonies of Snowy Egrets and Cattle Egrets *(Bubulcus ibis)* suggests they may eventually breed there.

On the coast of southern California, Little Blue Herons occur primarily in the fall, with some remaining through the winter. The majority of these are first-year immatures, in the all-white plumage. For the minimum 14 individuals discovered during the period 27 August through March, all but two are immature. The pattern of northward vagrancy in fall by immatures thus follows the pattern set by the other southern herons, Reddish Egret *(Egretta [=Dichromanassa] rufescens)* and Louisiana Heron *(E. [=Hydranassa] tricolor)* as described by McCaskie (1964). One of the published reports of winter immatures (San Diego, 19 March 1967, Hubbs 1968) is best disregarded. The emphasis this author gives to the green leg color (also shared by immature Snowy Egrets) as an identifying mark for the Little Blue Heron suggests that the records of this species reported by Hubbs (op. cit.) may well pertain to immature Snowy Egrets. That one of the two "Little Blue Herons" reported from Baja California in that paper (Punta Saucedal, 7 January 1967) was seen "stalking over intertidal boulders", a frequent behavior of the Snowy Egret, particularly indicates a misidentification was made.

There are also three records of Little Blue Herons in spring for coastal southern California; all of these are of adult birds. It is also of interest that the spring record for Inyo County was of an adult. Thus northward dispersal of immatures in fall, and of adults and second-year birds in spring and summer, accounts for nearly all of the records of Little Blue Herons in southern California.

In northern California one or two Little Blue Herons are usually found each year but the species' status there is less clear. All but two of the records are of adults, and all but the first state record are within the period 28 April to 25 September. Little Blue Herons have frequently been found in egret colonies, and behavior suggesting nesting was observed in 1965 on West Marin Island, Marin County (Chase and Paxton 1966). The collected fledgling (California Academy of Sciences 68446) proved not to be a Little Blue Heron, since the tips of the primaries were white (Laurence C. Binford pers. comm.). The possibility that it is a hybrid Little Blue Heron x Snowy Egret has not been excluded however. The bird was evidently collected on 4 September 1965 (the date on the specimen label) rather than 19 September as stated by Chase and Paxton (op. cit.). The possibility of local production was suggested for "a bird which was almost certainly a hybrid Little Blue Heron x Snowy Egret" which spent the winter of 1972-1973 at Palo Alto, Santa Clara County (DeSante, Gaines and Remsen 1973). A hybrid between these two species has been recorded at least once before (Sprunt 1954). It is possible that a few Little Blue Herons are persisting in the San Francisco Bay area without replenishment by birds from Mexico.

I thank Laurence C. Binford and Eugene A. Cardiff for supplying information on specimens and Guy McCaskie for useful comments on records and discussion on the distribution of Little Blue Heron in California in general.

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APPENDIX

Records of Little Blue Heron in California are listed chronologically by county. AFN refers to *Audubon Field Notes* and AB to *American Birds*.

Imperial:

1. New River mouth, S. end Salton Sea, 22 Jul 1972, 1 ad. AB 26:904, 1972.
2. S. end Salton Sea, 7 Dec 1974-8 Feb 1975, 1 ad. AB 29:741, 1975.
3. New River mouth, S. end Salton Sea, 3 Jul-14 Aug 1976, 1-4 ad.
4. Unit One, Salton Sea Natl. Wildlife Refuge, S. end Salton Sea, 24 Jul-5 Aug 1976, 1 2nd-year. AB 30:1002, 1976.

Riverside:

1. Whitewater River mouth, N. end Salton Sea, 4 Jun-10 Sep 1973, 1 2nd-year. AB 27:917-918, 1973; AB 28:107, 1974.

Inyo:

1. Furnace Cr. Ranch, 8 May 1976, 1 ad. AB 30:889, 1976.

San Diego:

1. San Luis Rey R. mouth, 14-20 Nov 1967, 1 imm. AFN 22:89, 1968.
2. Tijuana R. Valley, 4 Oct 1969, 1 imm. San Bernardino Co. Museum 4419, mounted and on display. AFN 24:98, 1970.
3. Buena Vista Lagoon, 9-13 Sep 1970, 1 imm. AFN 25:107, 1971.
4. Santa Margarita R. mouth, 25 Oct-6 Dec 1971, 1 imm. AB 26:120, 1972.
5. Santa Margarita R. mouth, 12-13 Jun 1972, 1 ad. AB 26:904, 1972.
6. Stewart Mesa, Camp Pendleton, 21 Sep 1973, 1 imm. AB 28:107, 1974.
7. Batiquitos Lagoon, Leucadia, 27 Aug 1976, 1 imm. AB 31:222, 1977.

Orange:

1. Capistrano Beach, 22-23 Oct 1966, 1 imm. AFN 21:77, 1967.
2. Seal Beach, 21 Nov 1970, 1 imm. AFN 25:107, 1971.
3. Upper Newport Bay, 5 Dec 1971, 1 imm. AB 26:654, 1972.
4. Bolsa Chica, 11 Sep 1972-24 Feb 1973, 1 imm.; 2 imm. present late Nov 1972-Jan 1973; 6 Nov 1972-Jan 1973, 1 ad. Immatures seen at nearby Newport Bay 31 Oct and 21 Nov 1972 were probably the same as the Bolsa Chica birds. AB 27:120, 662, 1973.
5. Bolsa Chica, 22 Nov 1973-5 May 1974, 1 ad., probably the same as the one present the previous winter. AB 28:107, 691, 851, 1974.
6. Bolsa Chica, 17 Nov 1974-27 Mar 1975, 1 ad., probably the same as the one present the two preceding winters.

Los Angeles:

1. Harbor Park, 24 Nov 1971, 1 imm. AB 26:120, 1972.

Santa Barbara:

1. Goleta, 18-20 May 1965, 1 ad. A motion picture film documenting this record has been seen and verified by Guy McCaskie. Condor 68:103, 1966.
2. Goleta, 28 Aug-1 Sep 1974, 1 ad. AB 29:120, 1975.

San Luis Obispo:

1. Morro Bay, 23 May 1976, 1 ad. AB 30:889, 1976.

Santa Clara:

1. Palo Alto Yacht Club, 27 Jul 1967, 1 imm. AFN 21:601, 1967.
2. Palo Alto, 30 Apr-19 May 1971, 1 ad. AB 25:794, 1971.
3. Palo Alto, 3-10 May 1975, 1 ad. AB 29:903, 1975.

San Mateo:

1. Bair Is., 28 Apr-5 Jun 1973, 1 ad. AB 27:814, 913, 1973.
2. Bair Is., 3-21 May 1974, 1 ad. AB 28:846, 1974.

Marin:

1. West Marin Is., 31 Aug-19 Sep 1965, 2 ad. AFN 20:87-88, 1966.
2. San Rafael, 6 Jul-10 Sep 1968, 2 ad. AFN 22:644, 1968; AFN 23:100, 1969.
3. San Rafael, 12 Jul-15 Sep 1969, 1 ad. AFN 23:690, 1969; AFN 24:89, 1970.
4. San Rafael, 5 Jul 1970, 1 ad. AFN 24:712, 1970.
5. Near San Quentin Prison, 29 Aug 1971, 2 ad. AB 26:113, 1972.
6. Bolinas Lagoon, 26 May 1975, 1 ad. AB 29:903, 1975.

Sonoma:

1. Bodega Bay, 7-15 Mar 1964, 1 imm. Condor 66:447, 1964.
2. Tolay Cr. mouth, 25 Sep 1965, 1 ad. Condor 68:103, 1966.

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INTERACTIONS BETWEEN A HARRIS' HAWK AND A BADGER

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On 15 June 1976 the authors observed interactions between a Harris' Hawk *(Parabuteo unicinctus)* and a Badger *(Taxidea taxus)* that have not previously been reported. The incident occurred along State Highway 385, 51 km south of Marathon, Brewster County, Texas, at 0745 on a clear calm day. The area is open ranchland dominated by scattered Honey Mesquite *(Prosopis juliflora)* and Creosote Bush *(Larrea tridentata)*. A metal watering trough and windmill are situated 25 m off the west side of the highway. Although no cows were present at the time, the ground was trampled and bare, except for the numerous dung piles within a radius of approximately 20 m of the trough.

Initially we were attracted to the scene when the Harris' Hawk flew from the road shoulder to the area of the watering trough as our car approached. We stopped and got out of the car to view the hawk through binoculars. It was then that we saw the Badger.

The Badger was methodically rooting under piles of cow dung and digging into the loose soil. By this time the hawk was standing on the ground near and watching the Badger; the latter appeared to be ignoring the hawk completely. The Badger moved from one dung pile to another, followed by the hawk, which examined the overturned dung piles as soon as the Badger moved on. At one time the hawk was no farther than 46 cm from the Badger. At another time the hawk flew to the top of a fence post directly above the busy mammal. We watched these activities for approximately 12 minutes while the Badger and hawk moved a distance of about 150 m. Not once did the Badger seem to be disturbed by the presence of either the hawk or us.

We later examined the piles of cow dung overturned by the Badger and also others that had not been disturbed. We discovered several arthropods beneath the undisturbed piles but none on the ground surface under the disturbed piles. Although we did not observe the hawk take any prey, we surmise that it searched for arthropods missed by the Badger. Pache (Wilson Bull. 86:72-74, 1976) found arthropods to be a significant part of 63 Harris' Hawk pellets examined in southeastern New Mexico.

A similar situation with a Badger and Coyote *(Canis latrans)* was described by Dobie (The Voice of the Coyote, Univ. Nebraska Press, 1961) in which a Coyote waited at a wood rat (*Neotoma* sp.) nest entrance while a Badger rummaged through the opposite side of the nest. Phillips et al. (The Birds of Arizona, Univ. Arizona Press, 1964) stated that the Ferruginous Hawk *(Buteo regalis)* and Red-tailed Hawk *(B. jamaicensis)* "have a reputation in Arizona for perching low near a working Badger in order to catch what prey slips past the digging mammal."

The relationship between the Harris' Hawk and the Badger might be that of mutualism, when both animals benefit from the association. However, unless the hawk acted as a lookout, it is doubtful if the Badger received any benefit from the hawk. Opportunism is a more likely relationship. The Harris' Hawk had learned to use the Badger's feeding habits for its own benefit.

Accepted 2 November 1977

A COMMON GRACKLE RECORD FOR OREGON

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On 28 May 1977 Priscilla Summers and I observed a Common Grackle *(Quiscalus quiscula)* at the headquarters of Malheur National Wildlife Refuge, Harney County, Oregon. We watched it through binoculars within 9 m for about 5 minutes as it fed on the lawn of one of the refuge residences. We also observed it in flight on two occasions. The following description was noted.

> A large blackbird with a noticeably long wedge-shaped tail. Although we did not have direct comparisons with other species of blackbirds, it seemed noticeably larger than a Brewer's Blackbird *(Euphagus cyanocephalus)*. Upperparts: entire head iridescent blue-green, back deep shiny bronze, sharply marked from the iridescence of head. Underparts: darkish, no iridescence or color noted, wings dark. Eye: light yellow, noticeably standing out from head. Bill: silvery black, similar to that of a Brewer's Blackbird but noticeably longer in proportion to head and more massive appearing. Tail: long and wedge-shaped; the folding upward from the center was easily seen in flight and was one of the most notable aspects of the bird. No sounds were heard from the bird.

I have seen Common Grackles in Colorado, Texas and one in California. Priscilla has seen only one previous to this one. We both have had much contact with Great-tailed Grackles *(Quiscalus mexicanus)*. At no time did we doubt our initial identification of the Common Grackle. It was obviously too large to be any of the regular blackbird species and too iridescent, bronzy and small to be a Great-tailed Grackle.

According to field guides and other sources, the female Common Grackle is a little smaller and duller than the male. This bird was not dull at all so presumably it was a male.

The Common Grackle breeds from northern British Columbia down the east side of the Rocky Mountains to northeastern New Mexico. There are casual or accidental records now for Washington, Idaho, Utah, Nevada and California. In Utah it is considered a "rare transient in northern Utah" (Behle and Perry, Utah birds, 1975). Therefore I was not too surprised to see this species show up in Oregon. As far as I can determine this is the first record for the state of Oregon.

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FIRST RECORD OF SCOTT'S ORIOLE FROM COLORADO

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On 1 May 1975 John and Joyce Cooper found a Scott's Oriole *(Icterus parisorum)* in Red Rocks Park, near Morrison, Jefferson Co., Colorado (Cooper 1975). On 2 May Robert Andrews and Remsen relocated the bird and studied it for 20 minutes as it foraged in flowering and budding cottonwoods in a brushy gully surrounded by large rock formations, foothill grassland, and scattered junipers. This location is on the eastern slope of the eastern foothills of the Rocky Mountains. Remsen obtained five photographs of the bird, from which the identification was confirmed by Laurence C. Binford, Curator of Birds, California Academy of Sciences, San Francisco, California. Binford (pers. comm.) noted that the age and sex of the bird could not be determined due to the difficulty in distinguishing immature males from dark-throated adult females and that the only thing which could be said with certainty was that it was not an adult male. Copies of the photographs have been deposited in the files of the Official Records Committee (O.R.C.) of the Colorado Field Ornithologists. Although the record has already been accepted as the first for Colorado on the basis of written descriptions submitted by John Cooper, Andrews and Remsen (record N-54-53; Reddall 1976), this note is the first report of the existence of the photographs to confirm the identification.

Interestingly, two more Scott's Orioles were found in Colorado in the next three days after the first bird was found. An adult male was seen by Hugh E. Kingery (Kingery 1975), Thompson G. Marsh, and Ralph Sargent on 3 May at Waterton, Jefferson Co. Another adult male was found by George R. Shier on 5 May at Golden, Jefferson Co. Both records have been accepted by the O.R.C. (records 54-75-90 and 54-75-91; Reddall 1976). These two localities are also along the eastern foothills of the Rockies, and neither is more than 25 km from Red Rocks Park. Another adult male found by Margaret Ewing was present 15 to 17 June 1975 at McCoy, Eagle Co. (accepted by the O.R.C., record 54-75-101; Reddall 1976).

Scott's Oriole has been listed from Colorado by Bailey and Niedrach (1965) on the basis of a sight record that was subsequently rejected by the O.R.C. for insufficient details (Reddall 1974). It is surprising that this species has not been recorded more frequently in Colorado, particularly in the western third of the state. It is an uncommon summer resident in southern Utah with a scattering of records in the northern part of the state (Hayward et al. 1976). It also summers locally in northern New Mexico (Ligon 1961; Hubbard 1970) and northeastern Arizona (Phillips, Marshall and Monson 1964).

Extralimital records of this species are not unprecedented. A brief literature search yielded one record from Ontario (Goodwin 1976), one from Minnesota (Maley 1974), six from Louisiana (Lowery 1974), and five from northern California (McCaskie et al. 1978). A few of these are spring records, including one each from Louisiana and northern California in the first week of May, the same time period as for three of the Colorado records. Most extralimital records, however, are from late fall and winter. This is curious since this species normally abandons its breeding grounds in the United States in late August or early September (Phillips, Marshall and Monson 1964; Behle and Perry 1975; Remsen, Cardiff and Cardiff MS). Thus there appears to be a substantial gap between the exodus of the breeding population from the southwestern United States and the earliest fall ar-

rival dates for extralimital birds. There are apparently no extralimital records before late fall or early winter, except for coastal southern California, where there are a few records of vagrant Scott's Orioles in late September and October (McCaskie 1966, 1969, 1974). This same pattern seems to be evident in several other migratory species reaching the northern limit of their breeding range in the southwestern United States, e.g. Broad-billed Hummingbird *(Cynanthus latirostris)*, Dusky-capped (=Olivaceous) Flycatcher *(Myiarchus tuberculifer)*, Coues' Flycatcher *(Contopus pertinax)*, Bendire's Thrasher *(Toxostoma bendirei)*, Lucy's Warbler *(Vermivora luciae)*, and Painted Redstart *(Myioborus pictus)*, and will be discussed in detail elsewhere (Remsen, Cardiff and Cardiff MS).

We are grateful to Laurence C. Binford for his many helpful suggestions in writing this note.

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SANDHILL CRANES BREEDING IN SIERRA VALLEY, CALIFORNIA

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The number of Greater Sandhill Cranes *(Grus canadensis tabida)* breeding in California has greatly decreased since the turn of the century. This subspecies was given "fully protected" status by the California Legislature in 1970. The current breeding range in the state is believed to be restricted to the northeastern plateau region, in Siskiyou, Modoc, Shasta and Lassen counties (Grinnell and Miller 1944, McCaskie and DeBenedictis 1966, Naylor et al. 1954). Carroll D. Littlefield of Malheur National Wildlife Refuge, Oregon, has records of 109 pairs breeding in northeastern California, but was unaware of any nesting south of Lassen Co. (pers. comm.). I observed a small breeding population south of the plateau region in Sierra Valley, Sierra and Plumas counties. This is the southernmost breeding locality for the state.

In the southern (Sierra Co.) portion of Sierra Valley, in late May 1976, Stephen Benner photographed a pair of Sandhill Cranes at a nest containing two eggs. The nest was in a wet cattle pasture approximately 2.4 km north of Sierraville. The dominant plants surrounding the nest were rushes (*Juncus* sp.) and sedges (*Carex* sp.). I visited the site on 20 November 1976 but found that the marsh was dry and cattle had destroyed the nest.

In the northern (Plumas Co.) part of Sierra Valley, from June through August 1976, I located nine cranes; usually the birds were in pairs, but on 5 July I saw a flock of seven. On 1 April and again on 30 April 1977 I noted a pair frequenting an area about 1.6 km south of the large steel bridge on Dyson Lane (=Marble Lane), 8 km south of Beckwourth. As I approached these birds, which were in a stand of dead tules *(Scirpus)*, one flew to a nearby field, jabbed at the ground, jumped, and crouched in the low vegetation. I was unable to find evidence of a nest, but on 14 May, when I returned to the same stand of *Scirpus* with David K. James, I found a bird sitting on a nest. On our approach the bird stood up and walked away, but stayed within a few meters of the nest. On 21 May a bird was still on the nest, presumably incubating. Instead of flying it crouched flat on the nest with neck outstretched, so that its entire body was concealed by young *Scirpus* stalks about 0.6 m in height. I did not flush the bird. On 14 June I found the nest empty. It was composed of floating Common Tules *(Scirpus acutus)* that formed a flat bed 1.2 x 0.9 m in size and only a few inches above the water level. The depth of the water under the nest was about 0.6 m, and the nearest open water was about 2.4 m away. I collected fragments of the nest and eggs (both CAS No. 9496) on 7 August. About 1.5 km north of the nest I saw another pair and a lone individual on 1 April and again on 30 April.

The middle toe of a footprint found near the nest measured 120 mm, within the range of variation of the subspecies *tabida* (100 to 123 mm) and too large for the more northern race *canadensis* (76 to 95 mm) (Buller 1967).

Littlefield (pers. comm.) has observed recent breeding invasions of cranes in isolated valleys in Oregon. My observations do not represent such an invasion. Cranes have been recorded since 1957 on waterfowl breeding ground survey flights over Sierra Valley (Table 1; California Fish and Games files). These surveys have been flown every year between 1 and 10 June since 1954. Other observations from Sierra Valley include five birds on 18 August 1963 and a pair on 23 July 1973 (unpublished data in *American Birds* Middle Pacific Coast Region files). A cursory survey of Sierra Valley from 1 July 1972 to 30 June 1973 by the California Department of Water Resources (1973) listed the Sandhill Crane without com-

Table 1. Number of Sandhill Cranes recorded on annual waterfowl breeding ground survey flights over Sierra Valley, Plumas and Sierra counties, California.

1957	1 adult, 1 nest	1973	1 pair with 1 imm.; 6 single adults
1960	1 adult	1974	2 pairs, 1 single adult
1965	1 pair, 2 single adults	1975	1 adult
1969	1 adult, 1 immature	1976	1 adult
1970	5 adults in a group	1977	2 pairs, 1 single adult

ment. The large wetland areas in the center of the valley, which have only limited private access and cannot be observed from any public road, were not surveyed by me; these could well support undetected cranes. Also, the valley receives little attention from field observers, as evidenced by the scarcity of records of other species.

Sierra Valley, embracing 110,000 acres, is composed primarily of hay fields and cattle pastures, with extensive wetlands and sagebrush. It seems to offer optimum crane habitat as described by Littlefield and Ryder (1968). Because of its inaccessibility, size and combination of habitats, the valley may well support a small permanent breeding population of Greater Sandhill Cranes.

I am indebted to Laurence C. Binford for much appreciated editorial assistance and direction on the manuscript, Carroll D. Littlefield for supplying valuable information, Stephen Benner for providing photographs of the first nesting pair in Sierra County, James P. Mackey for his suggestions on this project, and Robert C. Lee, Jr. for compiling data from Fish and Game files. This work was sponsored in part by National Science Foundation Grant No. SM 1-76-08071 through San Francisco State University.

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Accepted 17 February 1978

Bylaws of the
Western Field Ornithologists'
CALIFORNIA BIRD RECORDS COMMITTEE

I. *Name and Affiliation*

A. *Name.* The official name of this organization shall be the "Western Field Ornithologists' California Bird Records Committee," which may be shortened to the "California Bird Records Committee" and is hereafter referred to as the "Committee."

B. *Affiliation.* This is a committee of the Society known as the "Western Field Ornithologists."

II. *Purposes*

A. Validate records of birds from only the State of California and adjacent ocean. "Adjacent ocean" is herein defined as that area within 100 statute miles of the nearest part of the mainland and between latitudinal lines drawn westward from the two western corners of the State.

B. Maintain permanently the original bird records and all Committee votes and comments for use by future bird students.

C. Publish at least minimal data on all records receiving a decision.

D. Provide a means by which sight records can gain universal acceptance as valuable scientific data.

E. Increase knowledge of the birds of California.

F. Establish standards of observation and reporting against which field observers may compare their own techniques.

G. Keep or cause to keep the official California State List.

III. *Membership*

A. *Number and Definitions.* The committee shall consist of ten people, as follows: nine "Members," one of whom is the "Vice-Secretary," plus a "Secretary," each with one vote. For the purposes of these Bylaws, the Secretary is not considered a "Member," but the Vice-Secretary is. The term "Voting Member" includes all nine Members and the Secretary.

B. *Qualifications.* Anyone is eligible to become a Voting Member if, in the estimation of the existing Voting Members, that person has demonstrated an expert ability in and knowledge of field identification of birds and is a member in good standing of Western Field Ornithologists.

C. *Members.*

(1) *Election and Term of Office.*

(a) The nine Members shall be elected on a staggered basis, each for a term of three years. so that three will be elected each year. Election shall be by vote of a quorum present in person or represented by written ballot at the Annual Meeting of the Committee; proxies shall not be used in this election, but an absent Voting Member may vote by indicating his choices to the Secretary in writing prior to the meeting. The three candidates receiving the largest number of votes shall be elected; if necessary, ties shall be decided by an additional ballot(s) listing only those persons tied.

(b) Members take office at the close of the Annual Meeting at which they were elected and serve until the close of the third Annual Meeting after election or until their successors are elected. The Members-Elect may, at the discretion of the existing Committee, be seated, without vote, during the remainder of the Annual Meeting at which they were elected.

(c) Members may serve two consecutive full terms, after which they must retire for one year before they may be considered for re-election.

(2) *Nominations.* Nomination of Members shall be made only by Voting Members and only in writing to the Secretary at least 30 days prior to the Annual Meeting. It is the responsibility of the nominator to obtain approval of willingness to serve from the nominees he submits. Each nominator may make a maximum of one nomination per each vacancy, and may not nominate himself. If the total number of nominees is not sufficient to fill the vacant seats, it is the responsibility of the Secretary to nominate the number of persons required. The Secretary shall mail the names of the nominees to all Members at least three weeks in advance of the Annual Meeting.

D. *Secretary.*

(1) *Qualifications.* In addition to the Qualifications of Membership above, the Secretary must not at the same time be both Secretary and one of the nine Members.

(2) *Election and Term of Office.*

(a) The Secretary shall be elected for a term of one year. Election shall be by vote of five or more Members (a quorum being formed by the presence of the Secretary, who may not vote) present in person, not by proxy or ballot, at the Annual Meeting of the Committee. The candidate receiving the largest number of votes shall be elected; if necessary, a tie shall be decided by an additional ballot(s) listing only those persons tied. The Vice-Secretary or, in his absence, a Member shall conduct the election.

(b) The Secretary takes office at the close of the Annual Meeting at which he was elected and serves until the close of the next Annual Meeting or until his successor is elected.

(c) The Secretary may serve an unlimited number of terms.

(3) *Nominations.* Nominations for Secretary shall be made only by Members (not the Secretary or other persons) and only at the Annual Meeting, either in person or by letter to an attending Member. It is the responsibility of the nominator to obtain approval of willingness to serve from the nominee he submits. Each nominator may make a maximum of one nomination, and may not nominate himself.

(4) *Duties.*

(a) Receive, circulate, recirculate and file all bird records and supporting data submitted to the Committee. Whenever possible the records filed should be the originals, as copies fade with age.

(b) Vote on bird records (see Voting) and in all elections except that for the Secretaryship.

(c) Procure additional data on records when deemed desirable and possible by a Voting Member and especially when a record is to come up for discussion at a meeting of the Committee; prior to any meeting, furnish Members with a list of post-third-circulation records to be discussed.

(d) Tabulate results of all votes of the Committee, including votes on bird records, but excepting the election of the Secretary.

(e) With the approval of the Members, appoint chairpersons of subcommittees.

(f) Call and preside at Committee meetings.

(g) Keep or cause to keep minutes of Committee meetings.

(h) Keep current the Review List, furnish it to anyone upon request, and publish it in *Western Birds*, preferably with each Annual Report.

(i) Furnish Members with such equipment as needed, including Validation Forms.

(j) Furnish Members with a list of nominees for election to Member at least three weeks prior to the Annual Meeting.

(k) Furnish anyone, upon request, with all evidence, including Committee comments, concerning any accepted or rejected bird record.

(l) Furnish Report Forms to anyone upon request and free of charge.

(m) Keep current a master copy of these Bylaws and assure that they are properly applied.

E. *Vice-Secretary.*

(1) *Qualifications.* In addition to the Qualifications of Membership given above, the Vice-Secretary must be one of the nine Members.

(2) *Election and Term of Office.*

(a) The Vice-Secretary shall be elected for a term of one year. Election shall be by vote of a quorum present in person, not by proxy or ballot, at the Annual Meeting of the Committee. The candidate receiving the largest number of votes shall be elected; if necessary, ties shall be decided by an additional ballot(s) listing only those persons tied. The Secretary, or in his absence, a Member other than the Vice-Secretary, shall conduct this election. All Voting Members, including the current Vice-Secretary and all candidates, may vote.

(b) The Vice-Secretary takes office at the close of the Annual Meeting at which he was elected and serves until the close of the next Annual Meeting or until his successor is elected.

(c) The Vice-Secretary may serve an unlimited number of terms, except as provided in the Bylaws controlling the number of terms that a Member may serve.

(3) *Nominations.* Nominations for Vice-Secretary shall be made only by Voting Members, and only at the Annual Meeting, either in person or by letter to an attending Voting Member. It is the responsibility of the nominator to obtain approval of willingness to serve from the nominee he submits. Each nominator may make a maximum of one nomination, and may not nominate himself.

(4) *Duties.* The Vice-Secretary shall, at the Secretary's request, assist him in carrying out his duties. If the Secretary shall be unable to serve, then the Vice-Secretary shall act as Secretary in all respects. The Vice-Secretary, or his representative Member, shall conduct the election of the Secretary.

F. *Removals.* The Committee may remove, for cause, the Secretary or Members who are delinquent in their duties. Such action requires a vote of the majority of all other Voting Members, not merely of a quorum. A removal must be accomplished at a meeting of the Committee; absent Voting Members may vote by written ballot to the Committee.

G. *Vacancies and Special Elections.* If the Committee loses a Voting Member during mid-term (through death, resignation, removal, etc.), the Secretary shall immediately conduct an election, termed a Special Election, for the purpose of filling the vacancy. A Special Election may be conducted at a meeting or by individual contact (mail, telephone, etc.), whichever is most expedient in the opinion of the Secretary. The manner of nomination and election shall be similar, with appropriate exceptions, to the regular selection of a Member or Secretary, whichever pertains. The person elected shall serve the unexpired term of the person being replaced.

H. *Compensation.* Neither the Secretary nor a Member may receive compensation for his services, but may be reimbursed by the Treasurer of the Western Field Ornithologists for expenses reasonably incurred in the performance of his duties.

IV. *Meetings*

A. *Annual Meeting.* An Annual Meeting of the Committee shall be held once a year, at a time and place set by the Secretary, in consultation with the Members, for the purpose of election and for transacting such other business as may be brought before the meeting. The Secretary must give to all Members prior notice of the Annual Meeting, together with an agenda and list of nominees for Member.

B. *Special Meetings.* Special Meetings of the Committee may be called by the Secretary or by agreement of six or more Members, or in the Secretary's absence by the Vice-Secretary. Whoever calls the meeting must notify and provide an agenda to each Voting Member prior to the meeting.

C. *Quorum.* Six Voting Members in good standing, present in person, not by proxy, shall constitute a quorum for any meeting of the Committee.

V. *Bylaws*

A. *Formation.* All Bylaws and other procedures of the Committee are to be as determined by and only by the Committee, except that they may not be inconsistent with the Bylaws of the Western Field Ornithologists or with rules adopted by its Board of Directors.

B. *Review.* The Bylaws shall be reviewed regularly, at least once every five years, by the Committee.

C. *Changes.* These Bylaws may be changed by a majority vote of a quorum at any Committee meeting.

VI. *Bird Records*

A. *Definitions.* For the purposes of this Committee and these Bylaws, a "record" is considered to be written documentation submitted to the Committee as proof of the identity of a sighted, heard, collected, banded or photographed bird. The "Review List" is that most recent list of species that will be accepted for review by the Committee.

B. *Records Treated.*

(1) Records only from the State of California and adjacent ocean (as defined in II.A.) will be treated.

(2) The species treated will be as determined from time to time by the Committee. In general, the Review List will consist of species that have occurred within California and adjacent ocean four or fewer times per year in each of the ten years immediately preceding revision of the Review List. By majority vote of a quorum at a meeting, the Committee may, as it sees fit, add other species to the Review List, such as those whose identification is difficult. Records of species not on the Review List, but for which there is no accepted record for California, will be treated.

(3) The criteria for inclusion on the Review List, and the species listed, will be reviewed at least once every five years.

(4) The Secretary will be sure that the Review List is duplicated, made available to all who request it, and published in *Western Birds*, preferably with each Annual Report.

(5) Records based on specimens or bandings will be accepted and treated in the same manner as other records.

(6) Any record, whether published or not, old or new, may be submitted by a Voting Member or other person, whether or not an observer, if he has first attempted to obtain details from the observer(s). An exception to this is a record that has received a previous Committee Decision (see Resubmission).

(7) Records concerning species that are only locally or temporally rare in California will not be treated.

(8) Subspecies will not be treated unless listed as such on the Review List.

C. *Submission.* Records should be, but need not be, submitted on the Committee's official Report Form. The Secretary should see that these forms are readily available at no charge to all that request them.

D. *Resubmission.* A record that has received a final Committee decision, whether accepted or rejected, and even though published in the Committee Annual Report, may be resubmitted by the Secretary, a Member, an observer, or any other person, if and only if there becomes available new and substantial documentary evidence that might reverse the decision. For a record rejected because of questionable origin, such evidence might include the recognition of a natural pattern of occurrence. Such a record must be resubmitted and circulated as if never before submitted, except that it should be accompanied by all previous votes and comments of the Committee, its publication status, and all new evidence marked as such.

E. *Circulation Procedures.*

(1) *Initial Receipt by Secretary.* Upon receipt of a record, the Secretary should do the following:

(a) Affix to it a unique number, consisting of the year of receipt (not the year of sighting) followed by a hyphen and the next available unused number, starting with "1", for that year. If a record is represented by descriptions from more than one person, each description should receive the same number followed by a capital letter in sequence beginning with "A."

(b) Record in a safe place at least the name of the reporter, the name of the bird species, the date and locality of the record, and the record's number.

(c) Check the description for completeness and clarity and, if deemed desirable, request additional information from the reporter or other observers. Details thus acquired must be clearly marked as such and kept separate from the original submission; the original submission should not be returned to the reporter except in copy form.

(d) Vote on the record (see Voting).

(e) Send the record (along with other records, if desired) to a Member along with a cover sheet, which must list, in order of circulation, the names and addresses of all Voting Members, with the Secretary listed last, as well as the numbers both of the record(s) and the circulation round.

(2) *Receipt by Member.* Upon receipt of a record, the Member should do the following:

(a) Judge its validity and vote.

(b) Send the record to the next Member as soon as possible.

(c) Send the completed Validation Form to the Secretary.

(d) The last Member to vote should return the record to the Secretary.

(e) Proposed lengthy absences from a Member's mailing address should be reported to the Secretary. The circulation may be rerouted to accomodate such absences.

(3) *Recirculation.*

(a) A record shall be recirculated automatically, together with the votes and comments of every Member from previous circulations, until it has received a decision vote or until three circulations (two recirculations) have been completed, whichever comes first.

(b) If after the third circulation the record still has not received a decision vote, it will be kept by the Secretary until it can be discussed at a meeting of the Committee.

(c) The Secretary should solicit additional information from the reporter or other observers for any record scheduled to come before the assembled Committee.

(d) Prior to each meeting, the Secretary should inform Members of any post-third-circulation records scheduled for discussion.

(e) A record that has not received a decision vote after three circulations is to be discussed and voted upon at a meeting of the Committee. The final decision must be made at the first meeting in which the record is discussed.

(f) Regardless of whether or not a "final" decision is reached during the three circulations (but not at a meeting), any Voting Member may bring up a controversial record for discussion at a meeting of the Committee.

(g) Regardless of whether or not a "final" decision is reached during the first circulation (but not during the second or third circulation or at a meeting), the Secretary may recirculate a record if he feels that the Committee's comments might alter the decision.

(h) All decisions are final unless a record is to be resubmitted.

F. *Voting.*

(1) *Validation Forms.* The vote of each Voting Member, together with his comments, if any, must be submitted on an official Validation Form. This form must include spaces for at least the (a) record number, (b) name of the species, (c) name of the Committee Voting Member, (d) date of review, (e) number of the circulation, (f) Voting Member's decision, and (g) comments.

(2) *Voting Categories.*

(a) Accept.

(b) Reject, origin questionable.

(c) Reject, identification questionable.

Note: (b) and (c) together are termed a "non-accept" vote.

(3) *Abstentions.* Voting Members may not abstain from voting.

(4) *Secretary Vote.* The Secretary must vote. On the first circulation, he must vote prior to sending the record to Members (thus without seeing Members' comments).

(5) *Comments.* On the first circulation, a "reject" vote should be supported by appropriate comments. On the second and third circulations, either a "reject" or "accept" vote should be supported by comments.

(6) *Consultations.* On the first circulation, a Voting Member should not discuss a record with another Voting Member prior to both having voted. On the second and third circulations, prevote discussions with other Voting Members are acceptable. On any circulation, a Voting Member may consult anyone outside the Committee before voting.

(7) *Voting Criteria.* The criteria used by a Voting Member for acceptance or rejection of a record are an individual matter and should not be treated by these Bylaws. Such criteria might include records by single or untrustworthy observers, or records not identified to the satisfaction of the reporter.

(8) *Change in Members.* A circulation in progress at the time a new Member(s) is elected should be completed by the retired Member (except that removed Members do not qualify); subsequent circulations, and hence in some cases final voting, should be completed by the new Member(s).

(9) *Tabulation.* The voting results are tabulated by the Secretary after all Voting Members have voted.

(10) *Decision from Circulations.* On any circulation round, with all Voting Members voting,
(a) a record is considered accepted if it receives an unanimous "accept" vote or it receives no more than one "non-accept" vote.
(b) a record is considered rejected if it receives any combination of six or more "non-accept" votes.
(c) a record is to be recirculated, or after three circulations is to be presented at a meeting, if it receives votes in any combination other than in (a) or (b) above.

(11) *Decisions at Meetings.* A record will be "accepted" if, at a legal meeting of the Committee, it receives no more than one "non-accept" vote from those Voting Members present in person. Proxies shall not be allowed as votes. Records not "accepted" as above are "rejected."

(12) *Rejected Records.* Any rejected record that receives two or more "reject, identification questionable" votes will be published as "unaccepted, identification questionable." All other rejected records will be published as "unaccepted, origin questionable."

G. *Publication.*

(1) The decisions of the Committee shall be published annually, under the authorship of the Secretary and others if desired, in the form of an Annual Report, in *Western Birds*. A section of this Annual Report shall be devoted to bringing the California State List up to date.

(2) The published data for accepted records should include at least the name of the species, date(s) of observation, locality, and reporting observers. Other data may be added at the discretion of the Secretary and Members.

(3) Rejected records should also be published, with a minimum of the above data, except that observers' names should not be included (see Voting, Rejected Records). In publications, the term "unaccepted" should be used instead of "rejected."

(4) "Pending records" should not be published.

Compiled by Laurence C. Binford, Vice-Secretary, and the Committee:

John S. Luther, Secretary
Theodore A. Chandik
Alan M. Craig
Jon Dunn
Richard Erickson
Clifford R. Lyons
Guy McCaskie
Arnold Small
Richard W. Stallcup

Adopted 14 January 1978

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CORRIGENDUM

Western Birds 8:115, 1977: line 8, Akepa *(Loxops coccinea)* account, should read 2043 m vice 204 m.

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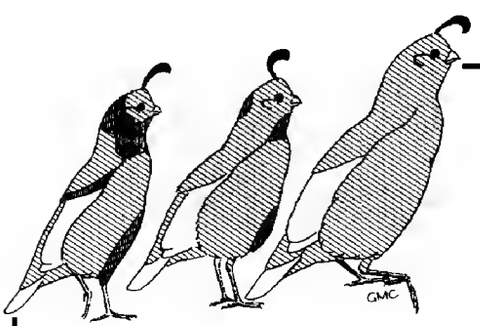

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